WASHINGTON STATE MOMS PROJECT

Perinatal Research and Demonstration Project

Perinatal Substance Abuse Research and Demonstration Grant funded through the National Institute on Drug Abuse (NIDA) Number DA-06361 and Washington State Department of Social and Health Services, Division of Alcohol and Substance Abuse

TABLE OF CONTENTS

MOMS PROJECT TABLES AND FIGURES

I. Participating Agencies

THE MOMS PROJECT FINAL REPORT

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DEPARTMENT OF SOCIAL AND HEALTH SERVICES, DIVISION OF ALCOHOL AND SUBSTANCE ABUSE,
Olympia, Washington 98504-5330

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Lyle Quasim, Secretary

Edwin Hidano, Assistant Secretary, Health and Rehabilitation Services

DIVISION OF ALCOHOL AND SUBSTANCE ABUSE

Kenneth D. Stark, Division Director

Mary Ann LaFazia, MSW, MOMS Project Director

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PARTICIPATING AGENCIES

PROJECT OFFICER
NATIONAL INSTITUTE ON DRUG ABUSE
Elizabeth Rahdert, Ph.D.

PRINCIPAL INVESTIGATOR
WASHINGTON STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES
Kenneth D. Stark, Director, Division of Alcohol and Substance Abuse

CO-PRINCIPAL INVESTIGATORS
UNIVERSITY OF WASHINGTON
D. Heather Watts, MD, Associate Professor, Department of Obstetrics and Gynecology

James Farrow, MD, Director, Adolescent Medicine, Center for Human Development and Disability

WASHINGTON STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES
DIVISION OF ALCOHOL AND SUBSTANCE ABUSE
Mary Ann LaFazia,MSW, Project Director
Christopher Hansen, Supervisor, Family and Prevention Services
Dwight Bond, Region IV Administrator
Antoinette Krupski, Ph.D., Research Supervisor
ECONOMIC, MEDICAL AND FIELD SERVICES DIVISION (EMFS), REGION IV
Teri Hall, On-site Supervisor, Case Management
John Leonard, Rainier Community Services Office Administrator

SEATTLE-KING COUNTY DEPARTMENT OF HEALTH
MATERNAL AND CHILD HEALTH SERVICES
Kathy Carson, MCH, Public Health Nurses Coordinator
Catherine Crawford, Nurse Supervisor

DIVISION OF ALCOHOLISM AND SUBSTANCE ABUSE SERVICES
Shoni Davis, RN, DNSc, Administrator, Perinatal Treatment Program
Sharon Toquinto, Treatment Director
Patrick Vanzo, Division Administrator

UNIVERSITY OF WASHINGTON
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
Marijane Krohn, Ph.D., Co-Investigator
Jean Lanz, Ph.D., Research Coordinator
Kate Lanagan, PA, Health Care Specialist

DEPARTMENT OF PSYCHIATRY AND BEHAVIORAL SCIENCES
Heather Carmichael Olson, Ph.D., Co-Investigator
Kim Kendall, Ph.D., Co-Investigator

PARENTS ANONYMOUS, WASHINGTON CHAPTER
Sylvia Meyers, Executive Director
Linda McDaniels, Project Staff

PROGRAM FOR EARLY PARENT SUPPORT
Jane White-Vullet, Executive Director
Katheryn Davis, Project Staff

POST INTERVENTION FOLLOW-UP
CENTER FOR HEALTH ECONOMICS RESEARCH
Joyce H Huber, Ph.D., Senior Economist
Jerry Cromwell, Ph.D., Senior Economist

WASHINGTON STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES
RESEARCH AND DATA ANALYSIS
Laurie Cawthon, MD, MPH
Fred Feidler, Ph.D.

II. Introduction - MOMS Project Key Findings

This document represents the result of the collaborative and cooperative effort of dedicated staff from academia, local and state governments, and private, non-private organizations. Against many obstacles, we were able to join our talents, expertise, and good will to field test our assumption that the provision of a comprehensive array of services, which focused on recovery for chemical-using pregnant and postpartum women, would increase the likelihood that the women and their infants would have an opportunity for healthy, drug-free lives.

The commitment and dedication of all program staff are greatly appreciated.

Special acknowledgment is extended to the Project Officer, Elizabeth Rahdert, Ph.D., from the National Institute on Drug Abuse (NIDA). Appreciation is also extended to Director Kenneth D. Stark, Supervisor Christopher Hansen, and Regional Administrator Dwight Bond, Division of Alcohol and Substance Abuse, the applicant agency, for their unyielding commitment to and support of the project.

This project final report is prepared to share our trials and tribulations which resulted in positive successes for women in achieving optimal maternal and infant out-comes. We present them so others may use what we have learned.

The women who participated in the project are also acknowledged in a most special way. We wish you the same joys and successes that we witnessed in seeing these women overcome their addiction, deliver healthy babies, and move on to drug-free living.

The Division of Alcohol and Substance Abuse is able to extend to other chemical dependency treatment agencies, the parenting education and parenting support services component. The chemical dependency treatment component, Perinatal Treatment Services, doing business as MOMS, is now a private, non-profit agency, which accepts referrals for treatment statewide.

This report contains a brief description, with selected highlights, of each demonstration component and each research study. People interested in the complete replication description for any demonstration component and/or the complete research study are invited to contact the Division of Alcohol and Substance Abuse.

Problem Statements

- Substance abuse during pregnancy is a serious problem, with increased rates of maternal, perinatal, and neonatal complications among heroin, cocaine, alcohol, and marijuana users (Kliegman et al., 1994, McCalla 1991, Jacobson 1994, Gillogley 1990, Little 1991a, Little 1991b).

- The average Medicaid payments for an infant's medical care during the first two years of life, for women whose substance abuse problem was identified but not treated in the prenatal period, was $5,447. This is higher than for women who received chemical dependency treatment in the prenatal period ($3,694) (Cawthon & Schrager 1994).

MOMS Project Goal

- The time of pregnancy has been regarded as a "window of opportunity" for heightened treatment motivation for pregnant, chemically dependent women, and an excellent time to begin monitoring infant health and development with the ultimate goals of improving the lives of families and reducing societal costs.

MOMS Project Key Findings

- Women identified with chemical dependency problems who received MOMS Project case management were significantly more likely to receive prenatal substance abuse treatement during pregnancy than women who received First Steps Casemanagement or no case management.

- Women randomized to the project's comprehensive, short-term residential treatment were more likely to stay in their treatment for more days than were women randomized to intensive outpatient or community treatment (which was either residential or outpatient treatment).

- Pregnancy outcomes were better among women assigned to comprehensive, short-term residential treatment, suggesting added benefit from the residential component. These women had a lower rate of pre-term birth than women in intensive outpatient or women receiving the community level of care.

- Regardless of treatment assignment, women with longer duration of chemical dependency treatment during pregnancy had a lower rate of pre-term birth, stillbirth, and prolonged neonatal hospital stays.

- Stillbirths were highest among women with no treatment during pregnancy with a remarkably high rate of 9 percent. Birth weight below 2500 grams, a marker for an increased risk of infant morbidity and death, tended to decrease as treatment stay increased.

- The rate of small-for-gestational-age infants was not different among groups, suggesting an effect early in pregnancy of chemical exposure, not reversed with treatment.

- The rate of infants requiring hospitalization for more than seven days decreased with mother's longer treatment stays, suggesting savings on neonatal hospital costs.

- The rate of fetal/infant death was significantly lower for women who participated in 21 or more days of substance abuse treatment.

I am an addict. I am a woman and a mother. It doesn't make me a monster. People treat mothers who are addicts like they are the worst kind of person ever born. There are so many women out there that don't know about the MOMS Project who need it. Being an addict at the MOMS Project has helped me to be responsibly independent, have higher self-esteem, and be honest with myself about my addiction. There are a lot of women out there who could use a program like this. I am a living witness that this program works.

The quotes in this report are from letters written by women in the MOMS Project Perinatal Treatment Program for the purpose of expressing their feelings and struggles in their recovery. The letters were prepared as an exercise for the Program for Early Parent Support parenting support group, with an assignment to request an appearance on a talk show.

I am struggling the best way I know how, trying to love my children even though I do not know how to love myself. I am not asking for pity, but how can a woman like me learn the basics so I can teach my babies the values and morals....

There should be places, people, and teachers (counselors) for people like me ...

The MOMS Project, a research and demonstration grant sponsored by the National Institute on Drug Abuse (NIDA), was one of 21 perinatal projects funded nationally in the early to mid-90s. The project was located in Seattle, Washington. The MOMS Project was an interdisciplinary approach to providing recovery services to pregnant, chemically dependent women, involving the expertise and input of seven related fields: chemical dependency treatment, medicine, public health, social services, child development, parenting education, and research. The Project incorporated the strength of field work (i.e., working with real people) with the power and clarity of research clinical trials.

The Project conducted a randomized, unblinded trial of three different modes of treatment: short-term residential with outpatient follow-up, intensive outpatient, and existing community treatment (which served as the control group). Both short-term residential and intensive outpatient treatment were offered in a treatment program funded and operated by the MOMS Project, which offered a comprehensive, woman-specific treatment approach to recovery. The community treatment mode involved referral to treatment programs in the community serving pregnant, chemically dependent women.

Pregnant, chemically dependent women, age 16 years or older, were enrolled in the project through their 28th gestational week. The primary research goals compared the three randomized treatment groups on the following: length of treatment stay, length of sobriety, pregnancy and delivery complications, improvement in the women's psychological profiles, and infant developmental outcomes up to age 2.

Demonstration Program Components

The demonstration components of the MOMS Project were designed to incorporate existing community services into a comprehensive service delivery model that focused on recovery for pregnant, chemically dependent women and their families.

Outreach/Case Management/ Maternity Services - The outreach and case management component of the MOMS project was a partnership of social workers from the public assistance agency and public health nurses from the county health department. In addition to recruitment of women to treatment, the case managers provided community outreach and education and ongoing management services to assist with medical and financial eligibility, referral to prenatal services, assistance with locating safe and sober housing, and assistance with childcare and parenting issues.

Maternal Medical Services - All women involved in the project received an initial, comprehensive health history and physical examination which included both general medicine and obstetric/gynecologic (ob/gyn) assessment through the MOMS Project Clinic, located at the Northwest Family Center. HIV testing and counseling and family planning counseling was provided to all participants. Nursing services at the treatment center ensured that medical care of women and children became an integral part of each client's treatment program.

Chemical Dependency Treatment Services - The Perinatal Treatment Program provided treatment services through intensive inpatient and outpatient modalities, and into aftercare services. The treatment was designed around women's comprehensive needs and reflected the progression of phases through which women proceed in the recovery process. Transition from each phase is based on individual progress: 1) Stabilization; 2) Recovery Planning; 3) Issues Resolution; and 4) Transitional Living. The residential modality of the project included children up to age 6 in residence with their mothers. The outpatient component provided childcare services for children up to age 6 while the mother participated in treatment.

Family Support Component - The project integrated family support principles as essential to substance abuse intervention. The actual treatment milieu, both outpatient and residential, incorporated family support principles throughout the program and more specifically through mandatory client participation in parenting education and parent support activities. The family support philosophy involves treating the family as a whole; staff was trained to give up the role of expert and treat parents as equals, while parents were encouraged to define strengths upon which to build.

Children's Services - Children's services included structured and informal childcare in residence. A therapeutic childcare program when parents were in treatment sessions was provided for children up to age 6. The services also included on-site supervision for Child Protective Services (CPS) visitations and referral to community childcare services for older children. Clients

took newborn babies to group treatment sessions with them. The children's services also included mental health assessments for older children not in residence with their mothers.

Research

The project accepted 55 women into treatment during a six-month pilot phase, beginning July 1, 1991. Randomization began January 1, 1992, and officially ended on June 30, 1994. Project demonstration and data collection continued through December 1996, with data analysis continuing until September 1998. The total project enrollment of 310 had women randomized into the following groups: control (96), short-term residential combined with ongoing outpatient (99), and intensive outpatient, combined with ongoing outpatient (99). A long-term residential component (16) was dropped early in the project. Analyses were conducted with the total of 365 women for certain variables, some analyses included both the pilot (n=55) and randomized (n=310) subjects, and other analyses depended on the availability of subject data for the analysis.

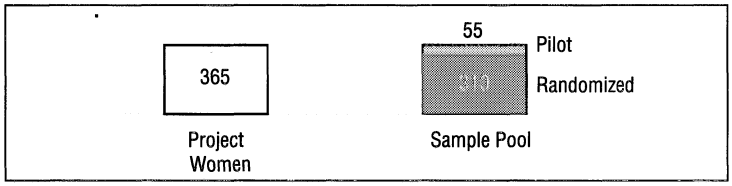
The MOMS Project demonstration and research provide valuable baseline and descriptive data, regarding pregnant, chemically dependent women. The total composite of data collected and analyzed helps us better understand those factors which contribute to an improved outcome for chemically dependent women and their children.

The following is a description of all women enrolled in the project, both pilot and randomized, for whom an initial chemical dependency assessment was completed: project women are older than the general population of pregnant women (median age 26 years); they often live without other adults (42 percent); 43 percent of the women have not completed their high-school education; and almost one-half (49 percent) of the women have never held a job longer than one year.

Women enrolled in the project were severely chemically dependent (89 percent), as assessed by DSM III for dependency. Slightly more than two-thirds (70 percent) have been in a treatment program at least once before; 32 percent have been in at least three other treatment programs. Frequency of primary drug of abuse was highest for cocaine (46 percent), lower for alcohol (27 percent), and less frequent for heroin (16 percent), and marijuana (11 percent).

A majority of women enrolled in the project report at least one incarceration (79 percent); half of the women (50 percent) report trouble with police before age 18. Of those women with other children, over half (58 percent) had involvement with CPS, with 40 percent having at least one child in CPS placement. A third of the women (33 percent) have been treated for non-drug-related mental health problems, while 26 percent have been prescribed psychoactive medication at some time in the past.

Figure 1: MOMS Project Sample Pool



Final Results

In evaluating the effect of chemical dependency treatment during the pregnancy, we used the following categories of treatment duration: no treatment, entered treatment but dropped out early (1 to 20 days), completed a short course of treatment (21 to 30 days), and extended period of treatment during pregnancy (30 or more days). Women have been categorized according to the duration of treatment regardless of the treatment modality.

- Women who had no treatment during pregnancy or dropped out early had an increased risk of pre-term delivery (delivery before 37 weeks gestation) compared to women who completed a short course of treatment.

- Women who received no treatment were over three times more likely to deliver a baby prematurely than women who received an extended duration of treatment (Hazard ratio = 3.8; 95 percent confidence interval 1.8 to 8.2). Women who dropped out early were over two times more likely to have a pre-term delivery than women who received an extended duration of treatment (Hazard ratio - 2.7; 95 percent confidence interval 1.1 to 6.7). These risks were determined after adjusting for other competing risk factors for pre-term delivery.

- Women who received no treatment during pregnancy or dropped out of treatment early had an increased frequency of placental abruption compared to women who completed a short course of treatment or remained in treatment for an extended period of time (p=0.0009).

- Women who received no treatment during pregnancy or who dropped out of treatment early had a higher frequency of fetal deaths than women who stayed for a short course of treatment or remained in treatment for an extended period of time (p = 0.006).

- Women who received no treatment during pregnancy or who dropped out of treatment early were significantly more likely to have a fetal or infant death than women who stayed in treatment over 21 days.

We were supposed to be strong regardless of what our circumstances were, such as: homelessness, dysfunctional homes, rape, molestation, prostitution, jail, compromised values, and losing our children due to addiction. For all the pain we endure, we are expected to take it and not medicate our emotions.

All the things I lost during my addiction, I am regaining through the MOMS Project because the MOMS Project caters to the needs of mothers and their children in recovery.

IV. PROJECT ORGANIZATION

By Mary Ann LaFazia

Background

Chemical dependency among women has received increased attention as a major public health problem with increased emphasis on the need to expand services for women (Reed, 1987; U.S. House of Representatives, 1990, Center for Substance Abuse Treatment (CSAT), 1994). Services for pregnant women should warrant an especially high priority because of the large number of children born each year at-risk due to prenatal alcohol or drug exposure (Vega et al., 1992), and due to societal concern about the welfare of children in families involved with substance abuse (Hawley & Disney, 1992).

Pregnancy offers a unique opportunity as women can be motivated to seek and participate in treatment during pregnancy and may also increase participation in prenatal care. In addition, treatment during pregnancy with decreased use or abstinence from drugs may reduce harm to the fetus and lower the high rate of adverse pregnancy outcomes seen among chemically dependent pregnant women. It is also an excellent time to begin monitoring infant health and development with the ultimate goals of improving the lives of families and reducing societal costs.

Many different types of chemical dependency treatment exist but they can be broadly grouped into outpatient or residential treatment. Residential treatment may be intensive and short-term (30 days or more) followed by outpatient, or it may be longer-term (up to two years or more), such as that in therapeutic communities. Since residential treatment is more costly than outpatient treatment, objective evidence of added benefit is needed to justify the added cost of including residential services as part of the continuum of care.

The primary research goals were to compare the three randomized treatment groups on the following: length of treatment stay, length of sobriety, pregnancy and delivery complications, improvement in the women's psychological profiles, and infant developmental outcomes up to 1 year after enrollment.

Randomization Rationale

Since clear criteria for assignment of pregnant, chemically dependent women to outpatient or residential treatment were not available at the time of project design, a randomized trial of treatment type was ethically justifiable and most appropriate for assessment of the impact of treatment. An intensive outpatient treatment program was compared to a similar program which also included a residential stay of up to 30 days. Both short-term residential and intensive outpatient treatment were provided in a treatment program funded and operated by the MOMS Project. These treatment modes offered a comprehensive, woman-specific treatment approach to recovery. Both groups were compared to a group of women randomly assigned to community treatment as would be available to women not participating in the project.

Eligibility criteria for the MOMS Project included being at least 16 years of age, less than 28 weeks pregnant at the time of referral (30 weeks at the time of enrollment), actively using substances, screened for moderate to severe chemical dependency, and physically and mentally able to participate in family-oriented treatment, and willing to consider being enrolled into this randomized clinical trial.

Project Composition

The Project was a cooperative effort with the Division of Alcohol and Substance Abuse (DASA), Washington State Department of Social and Health Services (DSHS), as the applicant and lead agency. Participating agencies included DSHS Economic and Medical Field Service; the Seattle-King County Health Department, Division of Alcoholism and Substance Abuse Services and Maternal and Child Health Services; Washington State Parents Anonymous; the Program for Early Parent Support; and the Department of Psychiatry and Behavioral Sciences, and the Department of Obstetrics and Gynecology from the University of Washington.

The MOMS Project established a comprehensive treatment program for pregnant and postpartum women and their infants. The MOMS Project was unique in that it utilized existing social, health, medical and other resources throughout the community to provide comprehensive care to pregnant, chemically dependent women. The resources included: outreach and case management, prenatal and postnatal medical care, chemical dependency treatment, research, family support, and child health and development.

Strategies which proved helpful in working cooperatively with each other in project implementation included: a) utilization of Qualified Service Agreements (in accordance with federal laws) to share client information between the chemical dependency treatment agency and participating community agencies; b) identification of a "common language" guide to convey similar meaning of terms to all staff; c) establishment of subcommittees for the purpose of dealing with functional organizational issues; d) development of a project mission and philosophy that addressed common direction and embraced cross-agency values and goals; and e) regularly scheduled opportunities to acknowledge project staff and celebrate project accomplishments.

These activities promoted staff cross-training and were helpful in bridging the knowledge gap among the different disciplines. Although some project staff struggled throughout the project, we were able to successfully work together in the collaboration of research and demonstration goals. Staff members were able to put aside their differences in the coordination of client care plans. The development of a project mission and philosophy especially lessened conflict and greatly enhanced project harmony.

Integration of Clinical Trial with Demonstration Project: As a research and demonstration project, the MOMS Project was committed to the successful integration of research methodology with the delivery of direct services. Two Principal Co-Investigators and the Project Director shared the coordination of the operation of the project. The Project Director worked to ensure adherence to project goals and objectives, to reasonably allocate and appropriately dispense funds, and address conflicts and differences of opinions in a timely manner. The Project Director worked for the applicant agency, the Division of Alcohol and Substance Abuse. A Project Coordinator ensured day-to-day coordination of research and service tasks and monitored the development and maintenance of a team approach.

The Project instituted two working committees for the purpose of dealing with functional organizational issues. The committees were titled "Project Implementation Committee" and "Project Research Committee." Participation on these committees was required of each project component and from each participating agency. Because much of the project services involved the actual creation of a service delivery model, each project component, at some time during the project, convened ad hoc work groups to address specific tasks or assignments.

The Project Implementation Committee was chaired by the Project Director. The committee met monthly in person and as needed, weekly via phone conference. This was a huge project which hired up to 80 people at the peak of implementation. The persons designated by their respective agency or project component to serve on the Implementation Committee, served as the business staff. Committee members were given authority to make procedural decisions and provide recommendations to the applicant agency on fiscal matters. This group worked to trouble shoot the multitude of problems that consistently surfaced throughout the project's life. The group's most important role, and one which each member took exceptionally seriously, was to *anticipate problems* and *develop solutions* in a most efficient and non-intrusive manner. The committee members were conscientious about attending meetings, and in spite of obstacles that appeared to never cease, were always positive and committed to making the project work.

In addition to the Implementation Committee, a Research Committee was established to oversee the coordination of longitudinal research requirements with ongoing program and field needs. The complexity of the data collection schedule, which included four baseline and eleven postpartum contacts, was managed by a research coordinator who supervised field research staff in the implementation of the research protocol.

The Research Committee was responsible for the development of the project's research protocol, including final selection of data collection instruments and determination of staffing needs. The Research Committee evolved into two subcommittees. The Research "Executive Committee" included the Co-Investigators and the Project Director with the responsibility of addressing issues of data management with final authority regarding design, methodology, and implementation of the project research. The "Research Demonstration Committee," as its name suggests, included representatives from each of the project's five demonstration components: medical, chemical dependency treatment, case management, family support, and research. It addressed procedural issues at the service and data collection level. The research coordinator provided the linkage between the two research committees.

MOMS Project Recovery Philosophy

A focus which was difficult to grasp in the initial stages of MOMS Project implementation was the concept of chemical dependency recovery, beginning with recruitment and retention of pregnant women, through the medical care, into treatment, and on to aftercare. Agencies worked hard to incorporate a recovery concept as the overriding goal for the pregnant, chemically dependent women in the project.

During implementation meetings, with an openness to learn from all sides, participating agencies were able to develop a MOMS Project Philosophy which made the focus for all agencies based on recovery principles. The non-chemical dependency treatment agencies were able to recognize that without a recovery goal, none of the efforts for the patients would become fruitful.

The chemical dependency treatment staff became knowledgeable about the strength of combining treatment strategies with family support, research, case management, nursing, and other professional entities. The result was the acceptance and dependence on the contributions from each agency in developing comprehensive service plans for each patient.

Project staff learned to recognize signs and symptoms of relapse and how to help clients effectively reduce or eliminate these signs and symptoms of defense mechanisms before destructive behavior patterns become reactivated. The interventions were designed to build upon the woman's strengths and to provide her with skills to aid in her recovery.

Recovery Process: The recovery process focused on assisting the woman to learn self-evaluating techniques by helping her identify strengths. She was provided with positive feedback and re-parenting techniques. Role-modeling by MOMS Project staff and peers helped the woman to restructure her dysfunctional behavior patterns in a safe and empathic environment. When the woman demonstrated the ability to recognize self-defeating behaviors and intervene in a myriad of "real-life" situations, the woman achieved a recovery-focused lifestyle. Women were taught through the recovery process that recovery is a lifelong process. They were taught skills to continue with their recovery after leaving treatment. Project staff worked toward incorporating the self-help model of recovery around the specific needs of the women.

The recovery process involved learning to recognize and intervene in the pattern of defense mechanisms. Defense mechanisms are the symptoms of the disease of chemical dependency. The main defense mechanisms involved in chemical dependency include: 1) denial, 2) avoidance, 3) minimizing, 4) rationalization, and 5) fatalistic thinking. Defense mechanisms are known to be danger signs in an individual with chemical dependency.

Because of the very nature of chemical dependency, the individual in the initial phases of recovery is not able to recognize these symptoms on her own. It was necessary for the MOMS Project staff to confront the woman with recognition of these symptoms. During the course of recovery, the woman began to recognize and intervene on her own when these symptoms began to arise.

Staff became knowledgeable about relapse and recognized that by the time the individual actually resumed drug use, her relapse was advanced. The MOMS project staff learned to be aware of the signs and symptoms of relapse (i.e., the occurrence of ineffective defense mechanisms) and focused the woman's recovery process on identifying and alleviating these symptoms.

MOMS *Project Staff Role:* Every member of the MOMS Project adopted the recovery approach. When in practice, this prevented the various agencies and organizations from unintentionally interfering with the woman's recovery process. For example, if a woman was identified as exhibiting a defense mechanism, she was confronted on it immediately by whomever the staff person was at the time. Multi-disciplinary staffing was used as an effective way of dealing with client-related issues. The staffing was scheduled on a regular basis with the woman to give her feedback related to her recovery progress. Peer group and peer staffing was included as an integral part of the woman's recovery.

The integration of a philosophy for the women's recovery, using a client-centered, multi-disciplinary approach, was advantageous in several ways. Women learned not to split the staff as the entire MOMS Project staff focused on keeping the women on a path to recovery. Keeping the women focused on their recovery process resulted in a stronger commitment to treatment, improved follow-through, and greater retention.

It takes guts to admit you have a problem and to get help. But why be humiliated in public when asking for help? There should be more programs for pregnant women seeking help so they can also have their children come with them. Most have problems stemming all the way back from childhood (physical abuse, sexual abuse, and violence). We seem to self-medicate the pain by our addiction and when we become pregnant, it is so hard to quit because the addiction is so deep and a lot do not realize the seriousness of their problems. What effects your abuse has on your fetus and when the baby becomes addicted.

MOMS PUBLIC HEALTH/ SOCIAL WORKER CASE MANAGEMENT TEAMS provided maternity support services to substance using women, which involves legal, social, and medical support advocacy efforts to obtain substance abuse treatment and necessary maternity and social services. The descriptions also demonstrate the need for persistence in working with these women toward the ultimate goal of substance abuse treatment.

County Jail Outreach

Client Description: **A 22-year-old African American, 19 weeks gestation, in jail at time of referral.**

Client Needs: **No prenatal care prior to arrest, no financial support, no medical coverage, denied Medicaid due to criminal justice status, court hearing on criminal charges.**

Case Manager Intervention: **Facilitated resolution for Medicaid coverage (through negotiations with the state office); arranged for community substance abuse treatment program; presented argument to court on behalf of client that pregnant mother and four-year-old child would best be served through treatment, rather than further incarceration.**

Outcome: **Client received amended sentence, participated in long-term residential treatment, delivered healthy baby, returned to community with children and remains in recovery.**

A. Community -Based Client Management

By Teri Hall, Kathy Carson, Catherine Crawford

Community Client Management was a component of the MOMS Project which included client recruitment, outreach to community agencies and organizations, and maternity case management.

(1) Recruitment

Admitting pregnant substance-using women into chemical dependency treatment services presented major challenges for the Project. After **finding** the women, the challenge became **motivating** them to participate in treatment. Potential problems that project planners suspected would be barriers to recruitment and enrollment had to do with randomization, enrollment prior to 28 weeks gestation, attitude of community health and social services clinicians toward chemical dependency treatment, severity of client chemical dependency problems, lack of legal mandate, and inclusion of adolescents.

Randomization: Through the use of focus groups with women in treatment, project staff learned that the reluctance of women to enter treatment had more to do with the nature of the disease of chemical dependency, such as denial, rather than concerns about research or randomization (Davis 1993). Problems associated with participation in a clinical trial appeared to be related to community clinicians' attitudes and not the opinion of the pregnant women being recruited. Out of the 310 pregnant women enrolled into the project, 21 women refused their random assignments. These women either chose not to enter treatment or selected a different treatment modality from their assignment.

Enrollment prior to 28 weeks of pregnancy: The enrollment of women early in pregnancy, prior to the third trimester, did not prove to be as problematic as was anticipated. For example, of the total number of 1,125 women outreached by project recruiters for potential recruitment pool, 38 percent were in their first trimester and 80 percent in their first or second trimester.

Attitudes of community social and health services clinicians: These clinicians were often reluctant to confront women about their chemical use for fear the women would stop using prenatal and other social and health services. They were often unaware of the availability of chemical dependency treatment services in the community, lacked the skills to recognize addictive disease, or had negative impressions of the efficacy of treatment.

Client chemical dependency severity: The majority of the women identified and enrolled into the project were diagnosed with severe chemical dependency (89 percent), based on the DSM III. The severity of the women's problem was not a barrier to either recruitment or enrollment.

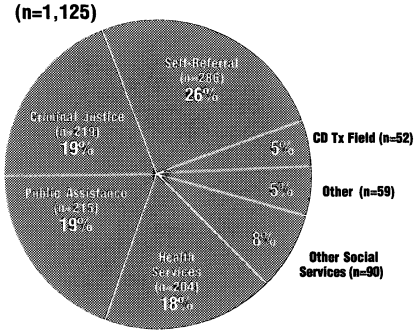
Lack of legal mandate: In Washington State, during the project's implementation phase, there continued to be discussion in the Legislature toward punitive measures for pregnant, chemically dependent women. Prosecution and/or mandatory contraception was often the favored legislative intervention. The project was able to demonstrate that early identification was possible and that pregnant, chemically dependent women, given the opportunity, would enter treatment, and this treatment would result in positive birth outcomes, without legal mandate.

Adolescent population: The initial study design proposed that up to 40 percent of clients would be pregnant adolescents over the age of 16. From the onset of the project, this population was difficult to recruit, engage, and enroll into the project. Extensive outreach was made to adolescent service agencies, schools, and the juvenile justice system. When, despite project efforts, adolescent recruitment continued to be problematic, youth care providers were surveyed to determine why referrals were not forthcoming. The following was revealed: 1) pregnant teens were hard to reach even for providers working exclusively with them; 2) agencies receiving supplemental funding to work with pregnant teens were reluctant to refer them to other programs for fear of losing their funding; 3) teens, still early in their substance abuse, were better able to cease their use at least temporarily when they discovered they were pregnant; and 4) agencies and teens did not identify substance abuse treatment as necessary (LaFazia, et al., 1996).

(2) Outreach

The MOMS Project outreach component utilized established programs which work with pregnant and substance-using populations. The outreach was conducted by teams of public health nurses from the Seattle-King County Health Department, Maternal and Child Health Services (MCH), and community social workers from the Department of Social and Health Services, Economic and Medical Field Services (EMFS). These professions have proven to be successful in helping the women improve birth and parenting outcomes. The success of the project's recruitment was directly related to utilizing these teams of community maternity case managers as primary recruitment agents.

Figure 2: Source of Client Referral (n=1,125)



Community Outreach

Client Description: A 27-year-old pregnant Caucasian woman with two children, ages 5 and 6, recently terminated long-term domestic violence (several hospitalizations) relationship; addicted to alcohol, cigarettes, occasional marijuana; raised in alcoholic environment; no high school diploma; low wage employment; and recently entered relationship with non-abusive partner.

Client Needs: Public assistance due to break-up with abusive partner (living on $490 month for self and two children/some financial support from ex-partner); served eviction notice from apartment (which cost $525 month); five months pregnant with no prenatal care; no extended family support; continued threats from ex-partner; no transportation to treatment; and no childcare for children while in treatment.

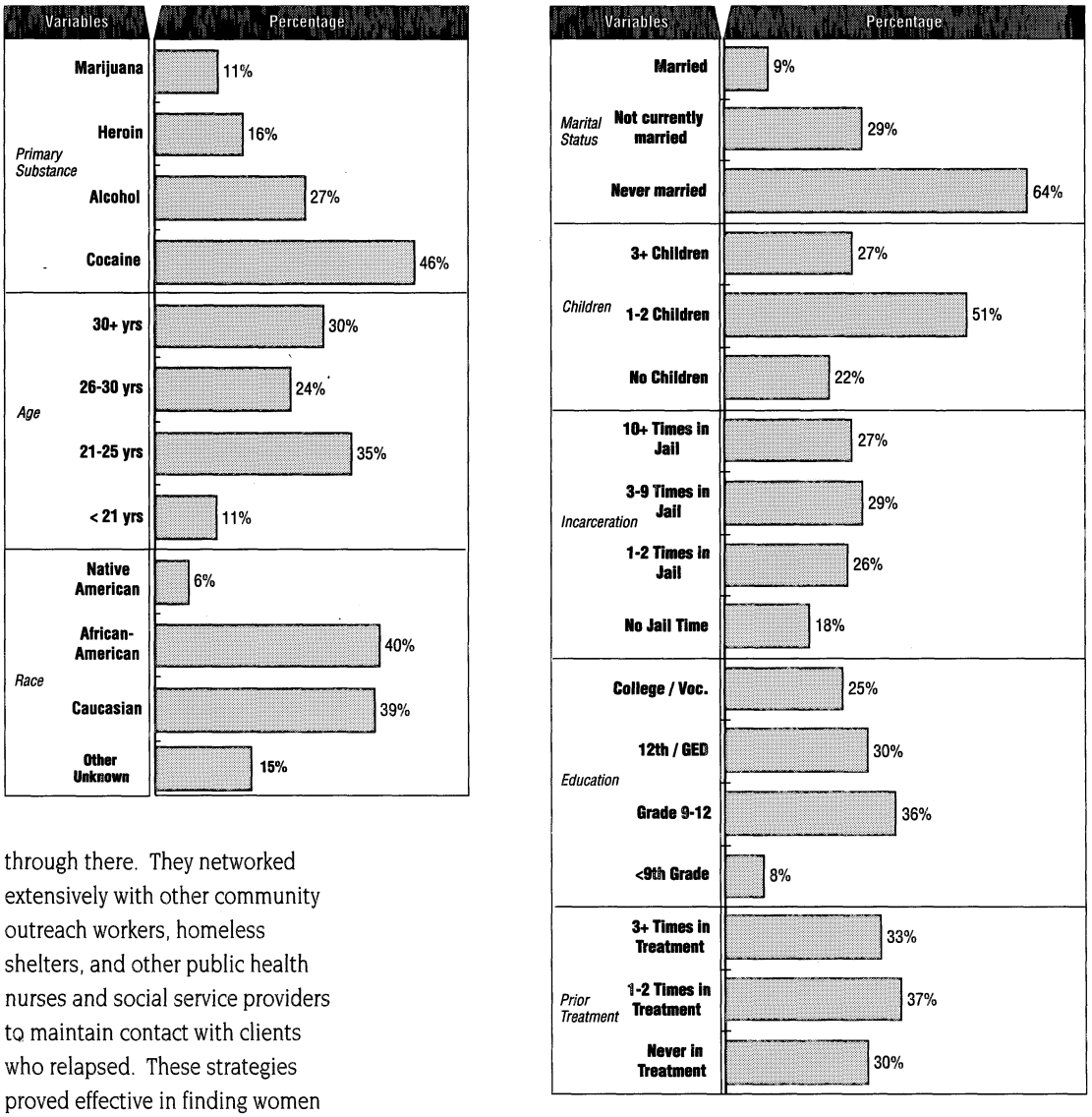
Case Management Intervention: Interceded with landlord to help resolve rental dispute; initiated referral to prenatal care; located childcare so client could participate in treatment; provided counseling about domestic violence; and, established role as support person to assist with problems which may arise.

Figure 2 on page 13, shows that the total number of women with whom the team outreached during the project (both pilot and randomization) period was 1,125, with the largest single referral source being women identified as self-referrals (25 percent of all women). Women outreached through local public welfare offices and health clinics accounted for a combined 37 percent. Outreach effort to women in the criminal justice system resulted in 19 percent of all referrals, of which 16 percent were incarcerated women in the county jail facility system.

Figure 3 is provided to show the description of the 1,125 women with whom the project made contact during the project recruitment phase. In this general population of drug-using pregnant women, cocaine was the primary drug of abuse, almost twice that of the next substance (alcohol). The women were equally represented for Caucasian and African American at 40 percent. A very small percentage of women were married (9 percent). Close to 85 percent of the women had some involvement with the criminal justice system.

The outreach/case management teams spent time educating a wide variety of community providers and maintaining contact with them over time, either by phone or through periodic newsletter mailings and on-site visits. Staff also visited the jail each week to recruit new clients and to follow clients who pass through there. They networked extensively with other community outreach workers, homeless shelters, and other public health nurses and social service providers to maintain contact with clients who relapsed. These strategies proved effective in finding women and getting them into treatment, in helping women who relapsed to re-enter treatment, and in developing and maintaining a therapeutic relationship with the women.

Figure 3: Demographics Client Recruitment Pool (n=1,125)



Recruitment strategies incorporated the project's Recovery Philosophy and recruitment scripts which utilized brief motivational interviewing techniques. The maternity case managers were able to incorporate their expertise in working with difficult populations and their knowledge of community resources into a specialized advocacy role, working with women toward the primary goal of referral to chemical dependency treatment.

The team worked in concert to engage and motivate women to participate in chemical dependency treatment through the MOMS Project. Activities included scheduling substance abuse assessment;

Referral to Treatment

Client Description: **A 34-year-old pregnant woman with four children; long-standing problem with smoking crack/cocaine (several hits a week for eight years); children in relatives' custody; involved with Child Protective Services system; transient living over several years; no history of prior treatment.**

Client Needs/Case Management Interventions: **Primary need of client was to make commitment to treatment; several phone calls and many no-shows for appointments at friends and relatives' homes for one month before first meeting; failed two substance abuse assessment appointments but responded to subsequent follow-up of letters and phone calls; provided advocacy for court hearings; assisted with getting baby items and safe housing.**

Outcome: **Client finally entered treatment three months after initial referral; successfully completed residential treatment; currently participating in outpatient treatment; delivered healthy twins.**

arranging for pregnancy verification and prenatal care; assisting with Medicaid or financial application, housing, childcare, school; and arranging pediatric health care services.

Once a pregnant woman was determined to be in need of treatment, her ambivalence about treatment was discussed, rather than her resistance to it. She was gently, but firmly, confronted with the consequences of her use on both her, her unborn child, and other family members. A contract of shared tasks was established with each woman. In this engagement process, the case manager's ability to be flexible and to go to the woman's home, a restaurant, or wherever she felt comfortable, contributed to the development of rapport.

(3) Maternity Case Management

When the woman agreed to an initial plan of care, a joint written case management service plan was developed with the client that acknowledged the woman's priorities, guided the team's activities, and, in consultation with the treatment counselor, incorporated into the overall service plan.

The role of the **public health nurses** was to promote health and family functioning and prevent disease and disability:

- Assessment of the impact of substance abuse on the health and functioning of mother, fetus and child; physiologic changes during pregnancy, preparation for labor and delivery; and postpartum assessment of mother and newborn.
- Education as to the importance of prenatal care and information about behaviors that affect healthy outcomes, such as smoking and substance use; and education on infant assessment, developmental guidance, recognition of infant cues, infant feeding, evaluation of health/sickness, immunizations, and dental care.
- Information on reproductive anatomy and physiology, contraceptive education, sexual health, prevention and recognition of sexually transmitted diseases, including information about HIV transmission and prevention; and information about nutritional needs of the woman and her baby.
- Counseling on preventive health measures, such as breast self-exam and PAP smears, the importance of ongoing medical care, and information about communicable diseases that are associated with substance abuse such as tuberculosis and hepatitis

The role of the **community social workers** was to teach the women to be better consumers of community social services:

- Work with a woman's ambivalence about changing her drug use and gently, but firmly, confronting her regarding her drug-related behaviors and helping the woman identify the consequences of her behaviors, define her goals and develop a plan to achieve those goals and develop new daily routines that avoid triggers for continued drug use.
- Provide education about how to use community programs and problem-solving when difficulties in accessing such services occur.
- Provide ongoing evaluation and assessment of mental health and social factors, including suicidal ideation, emotional and cognitive changes, domestic violence, child protection and crisis intervention, and making appropriate referrals for identified needs.
- Support a woman's recovery process by helping her access social services, medical and treatment resources, and education or job training program.

***Critical Aspects of* Outreach and Case management:** The social worker and public health nurse outreach/case management team experienced first-hand that women using alcohol and other drugs have compromised life skills which lead to poor pregnancy and birth outcomes, poor parenting skills, few jobs skills, and frequent pregnancies. These women often receive little or no prenatal care, smoke, have inadequate nutrition, untreated medical conditions, unstable housing, and inadequate knowledge about how to access medical and financial resources. Case managers focused on the constellation of associated problems which significantly impair a woman's ability to focus on her parenting and ongoing family needs.

The outreach/case manager teams were the single point of entry for all clients entering the project. While educational background is important in any hiring process, the attitudes and value system of the managers proved to be more predictive of successfully working with this population. Because of the chaotic nature of the women's lives, it is especially important that staff have these characteristics:

- respect for the women
- ability to follow through on agreements made with the women
- ability to continue to work with the women when recommendations are not accepted and to promote the women's independence
- value and enjoy working with diverse populations
- recognition of professional boundaries
- ability to confront the women with the consequences of their alcohol and other drug use on them, their unborn child, and other family members.

***Collaboration* Building Among Project Components:** Case management found an almost instantaneous fit within the Family Support Component as most of the goals and objectives of their respective fields centered around client advocacy and networking for client services. However, collaboration between case managers and chemical dependency staff was especially challenging because of differences in professional values, educational background, and work experiences.

Middle Income Pregnant Woman

Client Description: A 25-year-old, 18 weeks pregnant woman with a three-year-old child; eight-year history of intravenous heroin use; in methadone treatment but continuing to use clonipine and heroin; extreme depression and suicidal ideation; married for four years to non-drug-using man; middle-class income.
Client Needs: In debt due in part to large house payments and methadone treatment cost; dropped from prenatal clinic due to "high risk from substance abuse;" medical insurance won't cover residential treatment; insurance charging $500 deductible for prenatal coverage.
Case Manager Intervention: Advocated with community health clinic to continue to provide prenatal care; alerted chemical dependency counselor and physician assistant about client's depressed mental state which resulted in successful intervention; provided education about withdrawal effects from clonipine (depression and possible seizures); provided couple counseling concerning the pregnancy; negotiated with insurance company concerning $500 deductible.
Outcome: Client's prenatal care transferred to high-risk clinic for genetic counseling, client determined to be at high risk for birth defect so couple decided to terminate pregnancy; client returned to outpatient methadone treatment services and entered contract with counselor regarding clonipine use; couple regularly attend community 12-Step meetings and participate in marriage counseling.

Although strategies used to promote maternal and child health, such as outreach, home visiting, and intensive follow-up case management services are relevant to the needs of women involved in drug and alcohol use, they are not strategies with which chemical dependency staff were initially comfortable. These interventions were often perceived as "enabling" a woman's continued drug use. Conversely, the case management staff was not comfortable with the rigid structure of the treatment program necessary for women to commit to a recovery mind set. Case managers and treatment counselors were able to work together to keep women in treatment to lessen the effects of substance abuse on the baby. This was done through the adoption of the project Recovery Philosophy, regular case staffing, and cross-system training.

B. Medical Services

By *Kate Lanigan*

There were several components to the medical care system within the MOMS Project. All clients were assessed for detoxification needs both prior to and following assessment. In the event that detoxification services were required, community assigned clients and clients not enrolled in the project were referred to a local hospital for medical assessment and detoxification. Clients randomized into project treatment tracks were referred to the University of Washington Medical Center for detoxification. Upon discharge from the hospital, all clients were referred back to the MOMS staff for continued assessment, project enrollment, and treatment.

One medical care service consisted of medical evaluation for mothers and children admitted to treatment at the Perinatal Treatment Program. This evaluation included screening for acute medical problems, obstetrical complications in need of immediate attention, and any communicable diseases that may affect the facility. In addition, any children who accompany women to the facility also underwent communicable disease and acute illness screening. Nurses at the facility ensured compliance with perinatal and other medical appointments and communicated with health care providers as needed to coordinate care of clients.

A second service of medical care involved ongoing prenatal care for all project enrollees, through a physician's assistant and the project obstetrician. Care was provided at the Northwest Family Center (NWFC), a clinic located a few blocks from the treatment program.

NWFC was a county health department and University Medical Center partnership, with the project covering the cost of the physician assistant, some childcare cost and receptionist assistance. Because there were limited obstetrical options for chemically dependent women when the project was first initiated, it was assumed that the clinic would be able to provide prenatal care for chemically dependent women beyond the project phase. However, with the onset of managed care, the clinic concept beyond the project was not feasible.

Labor and delivery services were available at the University of Washington Medical Center for those women who utilized the NWFC ongoing prenatal care services. After delivery, women's health care services were available on an ongoing basis through two years postpartum for all women enrolled to the project. A pediatric exam was performed at one month of age for all infants of enrolled women. Primary pediatric care was not provided through the project and the women were assisted with finding community pediatric care for their infants. Continuity of care was encouraged for the child by finding a primary care provider who would continue to follow the child.

A third medical service provided was ongoing neuro-developmental and growth assessments funded by the research project through the Center for Human Development and Disability (CHDD) at the University of Washington. Infants with abnormalities were referred for appropriate follow-up through the clinical component of the CHDD.

C. Chemical Dependency Treatment

By Shoni Davis

Perinatal Treatment Services (PTS) is a state licensed and certified residential and outpatient program with a therapeutic licensed childcare component for chemically dependent women and their children. PTS was established in 1990 as the treatment site for chemical dependency services offered by the MOMS Project. Upon completion of the project, the Division of Alcohol and Substance Abuse and King County Division of Alcoholism and Substance Abuse Services (the umbrella agency for PTS) agreed to transfer management of PTS to a private, non-profit program.

PTS occupies two three-story houses in a residential area of downtown Seattle. A fenced playground separates the two buildings. Finding this easily accessible location in a residential section of the city involved addressing zoning issues; gaining approval from neighbors, including working with several grass-roots, neighborhood organizations opposed to having a drug treatment program in their neighborhood; and, eventually, appealing through the city land use department for waivers.

Challenges and Responses: One challenge that the newly established treatment program faced was learning to work in collaboration with many community agencies in providing an array of services to pregnant, chemically dependent women in conjunction with chemical dependency treatment. Treatment staff were not accustomed to providing chemical dependency treatment in conjunction with outside agencies. Staffing patients with six or seven professionals, such as CPS workers, case managers, and public health nurses, was initially viewed as an intrusion on treatment by the chemical dependency treatment staff.

Another challenge PTS faced was learning to deal with negative responses from many community chemical dependency treatment providers who criticized the MOMS treatment program for incorporating outside agencies into the treatment approach, for being interested in conducting research, and for not providing "traditional" treatment services. They also expressed concern with the integration of children into residence with mothers and the development of therapeutic childcare services as an adjunct to both residential and outpatient services.

PTS worked to overcome these criticisms by maintaining a recovery focus in all treatment and research activities. PTS initiated an all-out effort in building positive community networking with both community treatment providers and professionals from other disciplines to overcome the negative initial perception of the treatment center. It was the belief of PTS administrative staff that persistence in providing comprehensive and effective women-sensitive recovery services would replace the negative attitudes with positive ones.

The treatment program utilized the services of a multi-disciplinary team of community providers to meet the many needs of patients both on-site and through referrals to the community. The multi-disciplinary team addressed the needs of the women's children which were considered vital to achieve a positive family outcome.

PTS worked with local and state universities and colleges to provide training opportunities for interns from different disciplines. Internships included a masters level social work intern to work alongside the Children's Program Supervisor, a child- clinical psychology intern (Ph.D. level) who provided developmental screening for children, and chemical dependency counselor interns.

Beyond the project, PTS enjoys the recognition from state-wide chemical assessment and referral centers as a professional, well-managed treatment facility for women and their children. Community professionals and agencies maintain working agreements with PTS to make services available to the women in treatment, such as housing, Women and Infant Care (WIC), methadone services, public health nurses, community hospitals and medical providers, and the employment program. As a private non-profit agency, PTS continues research participation. One study was a solution-focused couples counseling project with Purdue University (Trepper, McClollum 1996 McCollum 1995) and a second study with the executive director as primary investigator on a client-denial study (Davis 1997). PTS has been able to demonstrate that it is both possible and beneficial to the overall treatment of chemically dependent women to combine research efforts and treatment services.

Treatment Description: Implementing the Family Support Model provided a therapeutic milieu within the residence for the women and their children, as well as overall

Basic Life Skills		
Client Description/Needs: Pregnant client in residential treatment; grew up on streets and homeless most of adult life; no skills in home making or housekeeping; no awareness about how to initiate an apartment or housing search.	*Case Manager Intervention:* Taught basic life skills such as how to look through newspaper for housing rental; how to ask questions on phone to inquire about cost location of housing and directions to apartment; how to call the bus company for bus routes to destination; assisted with developing list of reference people and agencies to offset history of homelessness, drug addiction and continued involvement with criminal justice system; assisted with developing list of unpaid debts and tips to contact debtors to arrange for payment prior to applying for credit.	*Outcome:* Client completed substance abuse treatment, obtained suitable housing, and moved out on her own into her own housing.

framework for the outpatient treatment services. The model focuses on positive family dynamics, individual strengths, and getting one's needs met through rewarding positive behaviors. Women learned through staff role-modeling and peer support, the process of effective parenting and how to reframe their own negative, addictive behaviors into positive coping behaviors. This proved to be more effective than giving negative consequences for inappropriate behaviors.

During project implementation, PTS provided residential and outpatient treatment services for chemically dependent pregnant and postpartum women and their children. The treatment facility had residential capacity for 16 women and 16 children and the outpatient program did not have a client limitation. PTS offered a 30-day intensive inpatient and 5-week intensive outpatient treatment for women and children, up to age 6. The women who were randomized to outpatient services participated in a treatment model to coincide with the residential treatment model. This was done to ensure that the two treatment modes were as similar as possible with the difference being that the women in residence stayed for the night and weekends. Outpatient women were invited to have all of their meals at the treatment site and were even invited to do their laundry on-site. Women in both residential and outpatient treatment participated in combined treatment activities during the week and structured weekend activities were provided for women in residence. Children, ages newborn to 6 years, lived in residence with their mothers. PTS' daycare was state licensed for infants, toddlers, and preschoolers.

Staffing: Because the needs of chemically dependent women are so diverse and encompass social, psychological, medical, crisis management, and parenting issues, as well as addiction to drugs, PTS attempted to staff the facility with a multi-disciplinary staff seasoned in both women's issues and cultural competence. Staff were skilled in behavior management techniques and maintained a solid understanding of women's issues.

PTS staffing consisted of three full-time chemical dependency counselors (CDC) and five part-time CDC interns. Also part of the staffing were a case manager, a registered nurse and three full-time Family Support Specialists (staff responsible for maintaining the residential milieu). A Children's Program Supervisor, with four childcare teachers, and one part-time residential childcare specialist managed the children's program component. A child psychologist was available to provide consultation to the Children's Program. The PTS administrative staff consisted of an accountant, receptionist, administrative assistant, and a doctoral-prepared Executive Director. Parenting education and mental health services were provided by established community parenting agencies and the University of Washington as part of the project through the Family Support Component.

Treatment phases: To maintain a structured and manageable treatment model, it was necessary to establish time frames for each treatment phase. Patients do not, however, progress through treatment at the same rate and each patient is individually assessed for phase change readiness.

Intervention techniques utilized at PTS include:

1. Group counseling - cognitive, social, and emotional learning opportunities in a supportive, structured setting.
2. Individual counseling - primary counselor who works with the patient on an individualized treatment plan and collaborates with the case manager to coordinate services for patient and her children.
3. Family counseling - upon intake, each patient identifies family members who she wishes to include in her treatment process. Educational and counseling sessions are offered to family members which focus on strengthening the dyad and /or family relationship in an effort to provide support to the patient's recovery efforts.
4. Health education - patients receive AIDS, health, and sexuality education from the RN, financial and housing assistance, educational and job training assistance from the case manager, mental health assessments.
5. Parenting education - parent education and support groups.
6. Couples Therapy - pilot project, "Systemic Couples Therapy," in which women worked on relationship with their significant others as couples, if the partner was able, willing, and appropriate to participate, or individually, if the partner was not available.

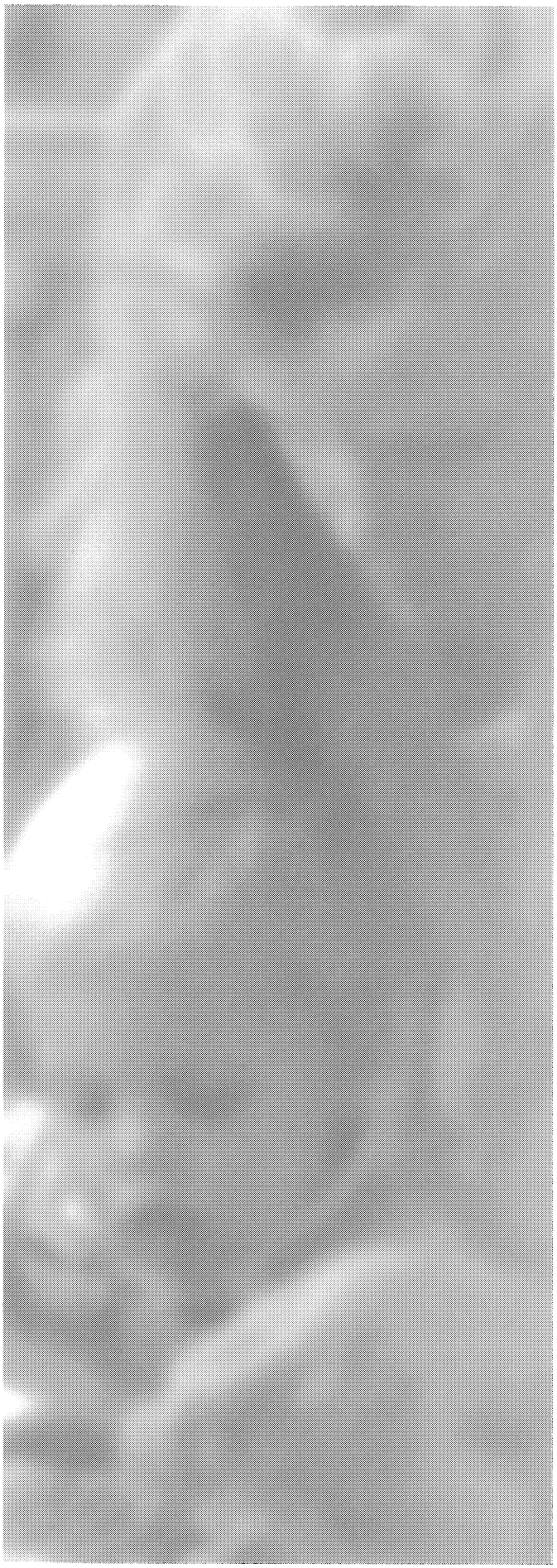
Phase I - Stabilization Phase: Phase I consisted of 35 days of placement with the first five days spent completing psychosocial testing, medical examinations, and detoxification and medical stabilization if necessary. Phase I was developed to stand alone for patients who were assigned to intensive inpatient and intensive outpatient phase. Patients were encouraged to continue into Phase II, III, and IV as individually assessed. The purpose of Phase I was to educate the patient about the problems associated with her drug use and how drug use has affected her interpersonal relationship, her family, and her ability to parent her children effectively. The patient became acquainted with the types of dysfunctional behaviors associated with her drug use, such

as denial, rationalization, manipulation, and minimizing. Examples of group activities of Phase I included Denial, Process Groups, Introduction to Recovery, Health and Nutrition, Alcohol and Drug Education, and Parent Education.

***Phase* II - *Recovery Planning Phase*:** Phase II was developed to be 12 weeks in length and focused on ways for the patient to begin to deal with the difficult task of restructuring her chaotic, often shattered life. The concept of recovery planning logistically followed the Stabilization Phase. It directed the patient's attention to the realities of the here and now and offered the patient a method of systematically outlining a pathway toward reaching the goals of stability and an improved life style. During Phase II, the patient evaluated aspects of her life, including relapse prevention, physical and mental health, legal issues, employment, financial and budgeting issues, education, family and interpersonal relationships, parenting issues, spirituality , and use of leisure time. Examples of group activities of Phase II included Recovery Planning, Relapse Prevention, Budget Management, Communications, Problem Solving, and Parenting Effectiveness.

***Phase* III - *Issues Resolution Phase*:** Phase III was developed to be eight weeks in length. During this phase, the patient focused on identifying and resolving personal issues of sexual and physical abuse, domestic violence, guilt and shame, abandonment, and relationships, all of which have been shown to correlate with drug abuse. While essential for recovery, abstinence and sobriety are not sufficient to ensure total recovery and adequate, effective parenting for chemically dependent women. The goal of Phase III was to provide a supportive atmosphere in which the patient could acknowledge and resolve personal, traumatic issues that led to low self-esteem and feelings of low self-worth. Group activities included Living Recovery, Relationships, Self Parenting, and Phase III Health groups. Patients continued to address issues identified during Phase I and II, such as Relapse Prevention and Recovery Planning.

***Phase* IV - *Transitional Living Phase*:** The fourth phase consisted of the final 12 months of the woman's involvement in structured treatment. This phase was intended to assist the patient in maintaining abstinence, preventing relapse, and living a balanced and healthy life style. The goal was to reinforce all the previously acquired skills and knowledge that the patient learned during Phases I through III, work on unresolved issues, and continue to work on parenting her children. During the fourth phase, the patient re-entered (or entered for the first time) the work force, obtained stable housing, worked on literacy skills, and completed her Personal Recovery Plan.



D. Family Support Component

By Family Support Committee

The **Family Support** component of the MOMS Project served as the umbrella for all the services and programs which focused on honoring children's needs, recognized the strengths of the mothers, and included the extended family unit. The combined efforts of the agencies and organizations, involved in developing and implementing the specific services of the project's Family Support Component, created a rich and safe environment for the parents and children in the project's chemical dependency treatment program.

The Family Support component included the following services:

- Therapeutic children's program, infant, and child development services.
- Program for Early Parent Support Group (On-site and Community).
- Adult play group.
- Parents Anonymous Chapters (on-site and community).
- Children's mental health consultation services.
- Adoption consultation services.

A Family Support Committee was established, which was comprised of representatives from each of the participating MOMS Project services: family support, research, case management, medical and treatment center staff. The committee involved themselves in everything from carrying boxes of toys through the mud of a barely remodeled treatment center, assembling cribs and ironing freshly-sewn curtains, to creating a specialized job description and hiring process for a qualified Children's Program Supervisor for the treatment center.

As is usual in most pioneer efforts, there was a consistent feeling of sailing unknown waters without map or compass, which created an endless supply of excitement. The committee members developed a mission statement from which all their work emerged: The goal for Family Support is to create a recovery community in which parents, children, and staff can be safe, healthy and valued within a multi-cultural, structured family support environment, based on the following:

- A healthy environment equals healthy people.
- Always start with the community's strengths.
- Each person in a community has expertise to give to that community.
- Each person in the community needs to set his/her own life goals.
- Each person needs to have a voice in the decision-making process for his/her community.
- One can only give family support if one is getting family support.

The recovery community environment strived to include components of "family": a common language, consistent rules and boundaries, family meetings, family rooms, family-style meals, daily rhythms and yearly rituals - bringing family support directly into the heart and soul of a chemical dependency treatment center.

Issues and Solutions: Chemical Dependency Treatment and Family Support Movement

Combining family support principles and chemical dependency treatment proved to be confusing and challenging, wonderful and exhausting, paralyzing and inspiring. Although the family support staff and the chemical dependency treatment staff heartily agreed on the overall goal of helping families begin and maintain recovery, philosophies and methods as to how best to reach this goal met just as heartily with conflict and confusion. Here is just one simple example for illustration: "Enabling" is perceived as an extremely positive and powerful word in the Family Support Movement. "Enabling" is perceived as an extremely destructive and unempowering word by chemical dependency treatment staff. The different uses of **one word** caused a variety of misunderstandings! We found ourselves constantly defining and re-defining terms.

Focusing on Strengths: After several meetings and co-training, the treatment staff felt comfortable that the family support staff would also confront parents on their parenting difficulties and not "gloss" over the pain chemical dependency had created in the family. In return, the treatment center staff would began to examine ways to focus on the parent's strengths and what they were doing right with their children. Essentially, each party had to feel confident the other party would provide a proper mixture of positive reinforcement, confrontation, and limit-setting.

Children's Safety Comes First: The Family Support staff was able to reframe the issue of notification to parents of mandatory CPS reporting as a matter of parent rights and not an attempt to threaten or silence the parents. It also allowed all staff to have an in-depth conversation about children's safety and that for moral, legal, and practical reasons children's safety must come first.

Adequate Space and Supplies: With qualified staff and consultations from the Family Support Committee, the safety and quality of the children's space and supplies improved dramatically. It must be stated that having a safe and consistent children's program improved the quality of everyone's life at the MOMS Project - for families and staff.

DEVELOPING PARENTING SKILLS: ***Parents accepted information most readily from peers and support groups, "pooling" what they know about child development.***

Positive parenting was used to help parents sort out what they really believe in as a parent, what inter-generational patterns they are unconsciously repeating.

EXAMPLES: One very touching group session was entirely dedicated to helping a new mom learn everything the 12 women collectively knew about breast-feeding. It was done with humor and honesty and a parent notetaker who wrote all the ideas down for the new mom to take with her. Numerous mothers reported learning to effectively praise their children, decrease their use of threatening and spanking, increase their use of problem prevention. After one session on sexual abuse prevention, a mother realized that her lack of any kind of positive touch with her child could be setting her child up to be victimized. She started a program of three hugs a day: one in the morning, one before bedtime, and one hug "whenever it feels right."

Honoring Pregnancy and Birth: ***Group is seen as a place for parents to share the incredible combination of feelings that overwhelm them as they attempt to maintain their recovery through pregnancy and birthing.***

EXAMPLES: The group supported one mother as she used the entire group session to describe her first drug-free birth experience. The facilitator and group members gave witness to her current joy and her past sorrow that she could not remember the births of her previous two children. During several sessions, several mothers talked about their fear of using any pain-relieving medications during birth as this might "ruin" their recovery. Numerous group sessions were spent on brainstorming ways to make the birth experience more positive than the mothers' previous birth experiences.

Honoring Grief: ***The facilitator created a place for the parents to share and support each other through the guilt and pain of what their addictions have done to their children and families.***

EXAMPLE: One week, a long time parent stated to a new parent "You have to feel guilty at first - that is part of your recovery. But you will get through it and be a good mom." During another session, several parents talked about the death of their children and how this reinforced their substance abuse and feelings of shame. Parents discussed difficult childhood memories and grieved for families that could never help them. A few parents were able to face the incredible pain that came from accepting the fact that their substance abuse during previous pregnancies had created permanent disabilities in their children. Other mothers were able to talk about allowing older children to be adopted and accepting the long-term grief.

Zero "O" Attendance: The treatment center staff understood that for mothers in the early stages of recovery, participation in parenting groups and activities needed to be mandatory. Once this change was made, the parenting education and support program groups began to develop in earnest.

(1) Parents Anonymous Chapter

By Linda McDaniels

Parents Anonymous (PA) is an international network of over 2,330 free, confidential, mutual-help support groups throughout the United States. Washington State Parents Anonymous was invited to be part of the project because it has a large statewide parent support network available to Washington State families. After completion of treatment services, women continued to receive parent support services in 35 PA chapters offered throughout the state each week. The PA support model has been adapted to diverse populations which include Latino, Islamic, Native American, Vietnamese, and Filipino communities.

Parent Program: Participation in the MOMS Project PA program was a required weekly group for every parent in treatment at the Perinatal Treatment Program. The program goal was the development of a positive, drug-free, parenting support system for each of the mothers. The mothers were helped to vent the pain of their own childhood and to make connections as to how this affected their current parenting patterns. Information about normal child development and positive parenting techniques were incorporated into each group session, and parents were connected to community resources which supported their recovery and positive parenting. Weekly support group topics helped parents learn positive parenting techniques, and appropriate child development, while facilitating "pooling" of community resources knowledge.

We learned early that bringing the two different disciplines together — chemical dependency treatment and family support — required trust, co-training on different professional philosophies, and compromise to successfully develop a PA chapter at the treatment center. Training to the treatment center staff included overview of the family support movement and principles; overview of unique mutual-help model; and general development of a PA chapter. Training to parent educators centered on the philosophy and goals of chemical dependency treatment of women.

Children's Program: Without the availability of childcare (in the form of a Children's Program), many parents would not be able to attend group meetings. By working with the children while the parents were receiving support, PA became a more positive experience for the whole family.

The PA Children's Program was incorporated into the structured childcare of the MOMS project chemical dependency treatment program, in the existing space, and with existing staff. The goal was to provide positive growth experiences for the children. This was accomplished by first creating a structured schedule for the children. The focus was on assessing the needs of the children and developing flexible activities to help meet these needs within a structured environment. The staff created safe limits for the children by utilizing positive communication techniques, positive intervention techniques, behavior management tools, positive reinforcement, and positive choices.

(2) Program for Early Parent Support

By *Katheryn Davis*

The Program for Early Parent Support (PEPS) was a network of support and discussion groups which gave parents the chance to share experiences and to form new friendships. The mission of PEPS was to enable parents of infants and young children to meet the challenge of parenting through mutual support and sharing of information.

Parent Support Group: As part of the Family Support component of the MOMS Project, PEPS provided new mothers from the Project with a parenting support group in which they shared their parenting strengths and experiences, learned from each other, determined subjects on which they needed professional help, and decreased their own social isolation.

Participation in the PEPS program was a required group for women in the treatment program. Mothers who participated were in their last trimester of pregnancy and/or had infants or toddlers from ages birth to three-years-old. Infants attended this group with mothers. It was essential to program success that the PEPS support program coincided with the rules and regulations of the treatment program.

The ongoing, informal curriculum acknowledged that while clients come and go, they can benefit regardless of their stage of treatment.

Adult Play Group: All women participated in PEPS "Adult Play Group," which originally started as "Parent/Child Activity Time." This group evolved into a group for the mothers after the mothers expressed that they did not know how to play, let alone play with their children. Activities were arts and crafts, outdoor or indoor games, board games, cultural and holiday projects or special events such as talent shows. In this group, the women were taught how to play without their children present. They were praised and taught new skills (arts and crafts). The mothers learned to develop family traditions to pass on to their children. This group became both an enjoyable and empowering experience for the women.

Community Outreach Program: Peps also provided a community support group for women with at least two months of working in a recovery program to establish themselves in the community. The group format was designed to provide mutual support to working through "relapse." Group discussions focused on any issue which affected the women's sobriety and their children's well-being.

Developing Family Strengths: ***New parents were always quite surprised when the facilitator asked them to describe times when they felt like "a great parent." The facilitator helped the parents to understand that each one of them have strengths as a parent. The Parents Anonymous group has helped the parents build on what they are doing right as parents.***

EXAMPLES: One parent asked the other parents if she could tape-record them telling her what a great parent she is. She wanted her mother to hear it. Several parents in the group became "experts" in the group, teaching other parents how to use positive discipline techniques, nurturing bedtime routines, shopping with children, etc. During one session, we had several newborn babies crying and the mothers taught each other lullabies to soothe the babies. We kept singing long after group time was technically over.

Creating Social and Leadership Skills: ***The group created a place for the parents to practice a variety of social and leadership skills. It is always our hope that the parents will develop these skills in group and use them to improve the general quality of their lives.***

EXAMPLES: When it is necessary for a positive group discussion, the facilitator will ask one of the parents to be "timekeeper" to ensure that every parent receives the time they need for their issues. During one group session, a parent came into group and stated: "I went to a meeting on my case at CPS. Everybody was talking over each other and I told them that we needed a good timekeeper!" Another parent learned how to "agree to disagree" in the Parents Anonymous group brainstorming sessions and she used this skill to create a better relationship with her mother. Several parents have set up programs to work together on certain parenting issues, such as how to make meal time more pleasant. Such "teamwork" fosters both positive parenting and positive relationships.

(3) Adoption Consultation Services

By *Heather Carmichael Olson*

Education and access to all pregnancy outcome choices included information on adoption, which was provided for clients by the mental health specialist, or other staff. Information about adoption was usually part of an ongoing group (such as a Health and Sexuality class offered by the treatment program), and focused on current trends, laws, and choices within the field of adoption. The services also included individual sessions with the women if requested to explore how an adoption would fit the best interests of the mother and the child. If a woman relinquished her child, assistance was given to the woman to find an adoption agency that best suited her needs and those of her infant. Assistance was also given to help the woman to advocate for herself during the adoption process and in finding post-adoption services.

(4) Therapeutic Child Services

By *Maura Costello*

Within the structure of the MOMS therapeutic childcare program, the primary goal was to address the social, developmental, and emotional needs of children. A multi-disciplinary team approach was used to develop and implement a Family Support Services plan. Developmental screening assessments were administered and feedback was given to parents regarding their child's development. This provided opportunities to validate that a child was developing appropriately, based on their age. In cases where developmental needs were present, education and resource referral reduced the anxiety and guilt a mother often felt. The service delivery units of treatment and childcare were seen as interdependent in reaching successful outcomes.

Inclusion of mothers in the childcare classroom for observation and participation, as part of the treatment plan, was an effective way to role-model positive interactions and behavior management strategies. This provided an opportunity for one-on-one consultation regarding child development needs.

Discharge planning was a key component in successful outcomes for parents and children. Planning began upon admission within the childcare, residential, and outpatient programs to prepare for planned and for potential abrupt departures. This was a critical component to the program's commitment to be sensitive to children's transitional needs.

(5) Children's Mental Health

By *Heather Carmichael Olson*

Children's Mental Health Services were part of the comprehensive Family Support Services. The purpose was to ensure the identification of children at-risk because of maternal substance abuse. Short-term therapeutic assistance was provided directly to the child and parent, and children were referred to community services while in treatment.

Children's mental health consultation services were provided for a full day on a weekly basis by a mental health professional with advanced training in child clinical and developmental psychology, and experience with substance abuse treatment, fetal alcohol/drug effects, and infant mental health. An internship between the University of Washington and the chemical dependency treatment program provided a supervised training experience and a way to augment service provision to women and their children.

I'm in a recovery center for women and I've seen and heard a lot. I, myself, have had five of my six children removed by CPS. This totally devastated me. People put me down because of this; I was in an abusive relationship, both emotionally and physically. People had always told me things were my fault. ... I tended to believe them and it hurt. So I turned to the drugs. That is the only thing that kept me sane and alive. It helped ease the pain I was feeling inside.

Today I'm in a treatment program that is helping me find my identity for the first time in my life. I actually love me for who I am. I don't let people take advantage of me or put me down. I have learned a lot in the past seven months about myself.

I believe there needs to be more women treatment facilities. There would be less pregnant women addicts and less addicted infants.

VI. RESEARCH FINDINGS

A. Research Protocol

The MOMS Project was designed to study an interdisciplinary approach to providing recovery services to pregnant, chemically dependent women, involving the expertise and input of seven related fields: chemical dependency treatment, medicine, public health, social services, child development, parenting education, and research.

The purpose of the MOMS Project was to conduct a randomized, unblinded trial of three different modes of treatment: short-term residential with outpatient follow-up, intensive outpatient, and existing community treatment (which served as the control group). Both short-term residential and intensive outpatient treatment were offered in a treatment program funded and operated by the MOMS Project. These treatment modes offered a comprehensive, woman-specific treatment approach to recovery. The community treatment mode involved assignments to any treatment program in the community serving pregnant, chemically dependent women.

The eligibility criteria for clients for the MOMS Project were:

(1) be at least 16 years of age

(2) be pregnant at less than 28 weeks gestational age

(3) be chemically dependent as evidenced by Michigan Alcohol Severity Test (MAST) score of at least 6 or a Drug Abuse Severity Test (DAST) score of at least 7

(4) be able to participate in all phases of a residential recovery program

(5) be willing to accept a randomized treatment assignment.

At the time of assessment, women who had a miscarriage or were planning a pregnancy termination were not eligible for entry into the project. After clients were enrolled in the project, those who had a miscarriage, stillbirth, or perinatal death were encouraged to continue in the project. Women who decided to have a termination after enrollment were also encouraged to remain in the project.

The primary research goals were to compare the three randomized treatment groups on the following: length of treatment stay, length of sobriety, pregnancy and delivery complications, improvement in the women's psychological profiles, and infant developmental outcomes up to one year post enrollment.

Research Questions

The research component of the project included investigators from disciplines within the University of Washington: adolescent medicine obstetrics and gynecology, epidemiology, psychology, child-clinical and developmental psychology, nursing, pediatrics, and social work. The following four hypotheses drove the researchers' individual questions:

1. Would pregnant, chemically dependent women who receive comprehensive services along a continuum of care reduce their alcohol and other drug use throughout pregnancy and through two-year period of post-delivery tracking?
2. Would infants of pregnant, chemically dependent women who receive prenatal medical services develop fewer damaging consequences of fetal drug exposure, compared to those who have not received services?
3. Would residential services result in greater rates of abstinence from alcohol and illegal drugs throughout the two-year post-delivery tracking period, compared to controls in any other intervention strategies?
4. Would treatment intervention models for pregnant chemically dependent women that focus on abstinence, support alternative lifestyles, and provide an array of medical and social services for the women, infants, and other family members, result in improved health, appropriate parenting behaviors, and better job and life skills?

Human Subjects Review: As a collaborative project between a state agency and the University system, the research design and protocol of the MOMS Project were reviewed and approved by both the Washington State Human Research Review Board and the Human Subjects Division of the University of Washington. Changes in protocol, instruments, and staff were communicated to the review committee on an ongoing basis with approval for the project reviewed annually.

Due to the collection of highly sensitive client data, the project also obtained a Certificate of Confidentiality from the federal government, Department of Health and Human Services (DHHS). The Certificate prevents the release of subject identity in any civil, criminal, administrative, or legislative proceedings.

Data Collection Protocol: The research protocol was a detailed account for data collection, which guided staff in their data collection duties. The Research Coordinator was responsible for monitoring the implementation, revision, and execution of procedures. The research of the MOMS project was complicated by the involvement of multiple disciplines, the comprehensiveness of the demonstration components, and the involvement of program staff in data collection.

To ensure that data was collected in a uniform, consistent, and timely manner, we designed a matrix grid which graphically displayed the research protocol. This was updated on a regular basis and was used to settle disputes and questions about research measures. The matrix protocol included: each measurement; time line for administration; person responsible to administer, to schedule appointment, and to get subject to appointment; location; name of investigator responsible for each measure; and incentives provided.

Gift certificates from major department store chains were used as incentives for the research data collection measures. Women often saved up their gift certificates to purchase high-cost items, such as cribs and strollers.

Data Management: All data were delivered to the Project's Data Manager, who designed and maintained detailed reports regarding anticipated, missing, and completed measures. The Data Manager was responsible for producing all project data files, and prepared completed instruments for data keying, cleaned the entered data, and created system files (SPSS) for analysis.

B. Study Subject Description for Each Analysis

The total sample size for the MOMS Project analyses was 365 pregnant women. This includes 55 women accepted into treatment during a study pilot phase (July 1991 through December 1991) and 311 enrolled and randomized between January 1992 and June 30, 1994 (one woman was eliminated from the study because she was not pregnant at the time of enrollment). Due to constraints imposed by the specific research question, individual data analyses dealt with sub-sets of the total population. (Table 1)

Table 1: Overview of Sample Size for Different Studies

Chapter		Sample Pool	Potential Population	Groups Analyzed	Number Eliminated
C	Demographics by type of drug use	365	365	357	8 [a]
C	Demographics by length of time in treatment	365	365	329	36 [b]
C	Profile of Psychosocial baselines	365	262	262	103 [d]
D	Obstetric and neonatal outcomes analysis	365	365	293	72 [c]
E	Antepartum drug abuse and pre-term delivery (secondary analysis)	365	293	181	184 [e]
F	Pregnancy outcomes for randomized chemically dependent adolescents	310	21	21	289 [j]
G	Pregnancy outcomes by randomized treatment groups	310	294 [f]	235	75 [g]
H	Psychosocial, parenting, and infant outcome analysis	310	294 [h]	153	157 [i]
$I_{(2)}$	Profile of women at-risk for refusing or under-utilizing treatment services	365	365	293	72 [k]
$J_{(1)}$	Predictors of decline in infant development	365	365	85	280 [l]
$J_{(1)}$	Infant outcomes analysis: Other indices	310	310	87 [n]	223
$J_{(2)}$	Infant outcomes analysis: MAI-ST	310	310	51 [m]	259
$J_{(3)}$	Fetal Alcohol Syndrome analysis	310	44 [o]	19 [p]	291 [q]
$K_{(1)}$		365	317	308	57 [r]
$K_{(2)}$	Post partum by duration of treatment	365	365	289	75 [s]
$J_{(3)}$	Post partum by treatment modality	310	249	240	70 [u]

a	missing data
b	missing length-of-time-in-treatment data
c	incomplete treatment and obstetrical data
d	failed to complete baseline requirements
e	missing genital specimen data, or not, at 16-30 weeks gestational age upon enrollment
f	excludes long-term residential; the treatment arm was dropped from the study
g	miscarriage or abortion, birth hospital unknown, refused treatment assignment, or treatment arm dropped (see footnote 6f)
h	excludes long-term residential; the treatment arm was dropped from the study
i	withdrew from study or treatment arm dropped (see footnote 6f)
j	randomized adults
k	incomplete treatment and obstetrical data
l	did not participate in follow-up
m	infants assessed at both first postpartum and follow-up visit.
n	infants available for follow-up test measurements at age 12 months
o	enrolled in MOMS project 7/93 to 11/93
p	agreed to participate in FAS sub-study
q	enrolled outside FAS sub-study time period
r	not matched to databases
s	not matched to database or missing treatment information
t	includes matched birth certificates; excludes long term
u	excludes 9 infants who died

Table 2a: Client Profile by Type of Drug Use

Legend:
- ◆ *Marijuana n=35*
- ■ *Alcohol n=97*
- □ *Cocaine n=168*
- ◇ *Heroin n=57*

Legend explanation: Read across to determine the percentage and significance for each drug for selected variables.

p value explanation: NS- indicates no significance. "p value"- indicates level of statistical significance. A "p" value of 0.05 or less shows that a group differed significantly among drug types when compared across variables.

Variable		Total Sample n=367 number	Total Sample n=367 percent	Percent by Primary Drug Use 0 20 40 60 80	p value
Age	<21	40	11%	◇ ◆ □	p=0.001 M
	21-25	120	35%	◆ ◇ ■ □	NS
	26-30	88	24%	◆ ◇ ■ □	NS
	>30	110	30%	◆ ■ ◇ □	p=0.01 H
Race	Caucasian	143	39%	◆ ■ ◇ □	p=0.000 H
	African American	147	40%	◇ ◆ ■ □	p=0.000 C
	Native American	22	6%	◆ ◇ □ ■	p=0.01 A
	Other	55	15%	◆ ◇ ■ □	NS
Children	3 + children	99	27%	◆ ◇ ■ □	p=0.000 C
	1 to 2 children	184	50%	◆ ◇ ■ □	NS
	Childless	81	22%	◆ ■ ◇ □	p=0.05 H
Marital Status	Never married	234	64%	◇ ◆ ■ □	p=0.03 H
	Not currently married	106	29%	◆ ◇ ■ □	NS
	Married	33	9%	◆ ◇ ■ □	NS
Arrest History	Prostitution	137	37%	■ ◆ □ ◇	p=0.01 C, H
	Forgery	44	12%	◆ ■ □ ◇	p=0.05 H
	Shoplifting	191	52%	■ ◆ □ ◇	p=0.05 H
	DWI	55	15%	◆ □ ◇ ■	p=0.001 H
	Probation Violation	125	34%	◆ ■ □ ◇	p=0.01 H
	Domestic Violence	59	16%	◇ ◆ □ ■	p=0.02 A
Incarceration	No Jail	66	18%	◆ ◇ ■ □	p=0.02 A
	1-2 Times	95	26%	◆ ◇ □ ■	p=0.02 A
	3-9 Times	110	30%	◆ ■ ◇ □	NS
	10+ Times	99	27%	◆ ◇ ■ □	NS
Illegal Income	Yes	48	13%	◆ ■ □ ◇	p=0.01 H
Prescribed Psych Meds	Yes	95	26%	◆ ◇ ■ □	p=0.05 H
Attempted Suicide	Yes	117	32%	■ ◇ □ ◆	p=0.03 M
Previous Treatment Episodes	>3	110	30%	◆ ■ ◇ □	p=0.000 H
	1-2	137	37%	◆ ◇ ■ □	NS
	None	121	33%	◇ ◆ ■ □	p=0.01 M

Note: Most women used multiple drugs and this table indicates the drug women considered their primary drug of use.

C. Description of Study Population for Selected Demographics and Length of Stay in Treatment by Primary Drug of Abuse

By *Shoni Davis*

Study Objectives: The research objectives for this part of the project were to describe chemically dependent women with respect to primary drug of abuse according to demographics, and previous abuse, arrest, chemical dependency, treatment, and mental health history and to assess the length of stay in treatment for each primary drug of abuse. We hypothesized that demographic and historical factors might differ among women choosing different drugs and that these factors might influence participation in chemical dependency treatment.

Methods: Descriptive data for this study were collected from structured interviews at time of intake from pilot (non-randomized) and randomized subjects. Type of drug was categorized by the woman's designation of her primary drug as either marijuana, alcohol, cocaine, or heroin. The differences in descriptive factors were evaluated for statistical significance using Chi square statistics.

- When analyzed by type of drug, heroin, and crack/cocaine users revealed a greater number of differences than did marijuana or alcohol users.
- The women who used heroin as their primary drug were more likely to be over age 30, Caucasian, childless, and less likely to have ever been married. Heroin users were also more likely to have arrest histories for prostitution, forgery, shoplifting, DWI, and violation of probation, and to have had more than three previous treatment episodes.
- Crack/cocaine users were more likely to be African-American and, like heroin users, more apt to have arrest histories for prostitution. However, crack/cocaine users were less likely than the other drug groups to be childless or to have self-reported suicide attempts.
- Marijuana users were more likely to be under the age of 21, to have had no prior chemical dependency treatment, and to have self-reported suicide attempts.
- Alcohol users were more likely to be Native American and to have a history of DWI arrests and arrests for domestic violence.

Table 2b: Client Profile by Length of Treatment

Variables		Total Sample n=329		Percent by Days	*p value*
		Number	Percent	90+ Days n=95 (29%)	
Primary Drug	**Marijuana**	53	16%	17%	*NS*
	Alcohol	89	27%	34%	*p=0.02*
	Cocaine	92	28%	23%	*NS*
	Heroin	95	29%	42%	*p=0.02*
Education	**<9th**	26	8%	15%	*NS*
	9-12	48	36%	24%	*NS*
	12th/GED	99	30%	38%	*p=0.05*
	College/VOC	82	25%	29%	*NS*

"NS" indicates no significance for the item
"p" value indicates level of significance

- Table 2(b) describes major findings to profile a client by length of time in treatment. Length of time in treatment was categorized as admission failure (n=53), 1 to 30 days treatment (n=88), 31 through 90 days of treatment (n=93), and greater than 90 days of treatment (n=95) for the first episode of chemical dependency treatment during pregnancy after study enrollment.
- When analyzed by length of time in treatment, only three significant differences were found and these were related to 90+ days in treatment. Women who remained in treatment over 90 days were more likely to be heroin or alcohol users and to have completed high school requirements.

Study Implications: When compared by primary drug, demographic and treatment histories varied among the women enrolled. Treatment programs, which include participants' children, must take into account the large number of children among cocaine users. Marijuana users tended to be adolescents without prior chemical dependency treatment. The greater treatment duration among heroin and alcohol users underscores the difficulty in retaining cocaine users in treatment and may also be related to the relatively younger age among the cocaine users. Longer treatment duration among women with a high school or equivalency degree may reflect a difference in motivation or may indicate that treatment content needs to be geared toward an academic level lower than what is presently provided. Examination of characteristics and treatment stay by primary drug may allow better tailoring of treatment for individual women, while continuing to recog-nize that substance abuse is usually not confined to a single drug.

D. Chemical Dependency Treatment Compliance and Pregnancy Outcome by Treatment Modality

By D. Heather Watts

Background and Rationale: The Intensive Outpatient (IOP) curriculum was a daily program for the first 30 days and tapered to regular outpatient. The short-term residential (STR) curriculum was similar to the IOP for the first 30 days except that clients resided at the treatment facility. After the first 30 days of treatment, clients in the STR curriculum move into outpatient services. For the community treatment assignment, clients and counselors decided on a community treatment program, based on chemical dependency assessment. Case managers and counselors located a community treatment program which would accept the client and worked with her until she was admitted. The community treatment programs may have been either outpatient or residential.

Initially, we hypothesized that long-term residential treatment (up to six months) might result in the best pregnancy and maternal outcomes because of removal of the woman from her drug-using milieu with reduced fetal drug exposure during pregnancy. However, the refusal rate was substantially higher among women randomized to long-term residential treatment. Also, the impact on available slots for randomization to project study was

substantial while waiting for openings for long-term assignments Therefore this arm was dropped early in the study.

Study Objectives

1. To determine whether the length of chemical dependency treatment participation b pregnant women was longer i clients were randomly assigned t short-term residential treatmen compared with comprehensiv outpatient treatment o community treatment options
2. To assess the frequency of pre -term delivery among wome randomly assigned to the thre treatment groups

Methods: This analysis includ complete information on 78 of th 97 women allocated to communit treatment, 78 of the 99 wome randomized to intensive outpatien treatment, and 79 of the 99 women randomized to short-term residential treatment (n=235).

At the enrollment interview, 311 women were determined to be chemically dependent by the standardized questionnaires and were randomly allocated to one of three treatment arms. From among the 311 women, one woman was ineligible because she was not pregnant at the time of randomization, 21 refused to participate in the program after learning their treatment assignment (i.e., two community, ten intensive outpatient, five short-term residential, and four long-term residential). The long-term residential was eliminated early in the study and, therefore, the total of 16 long-term residential clients were excluded from analysis. Of the remaining 277 women, 42 were not available for analysis because they had a miscarriage or abortion (n=24) or because study personnel were unable to locate their delivery hospital (n=18).

Figure 4: Sample Size: Project Randomization Participation

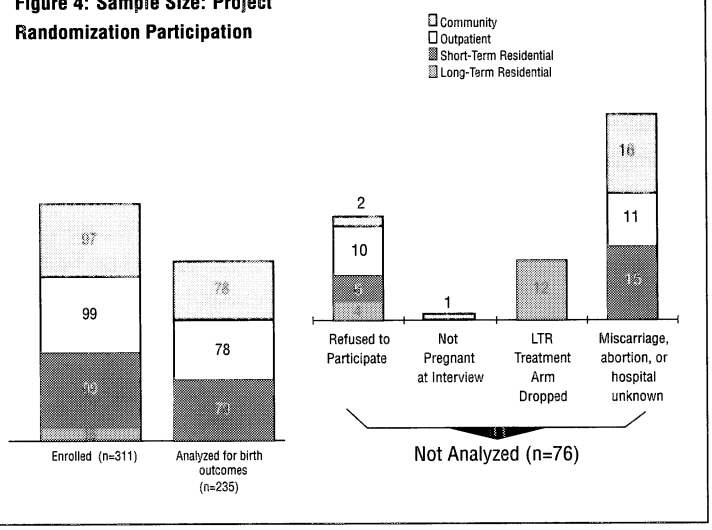
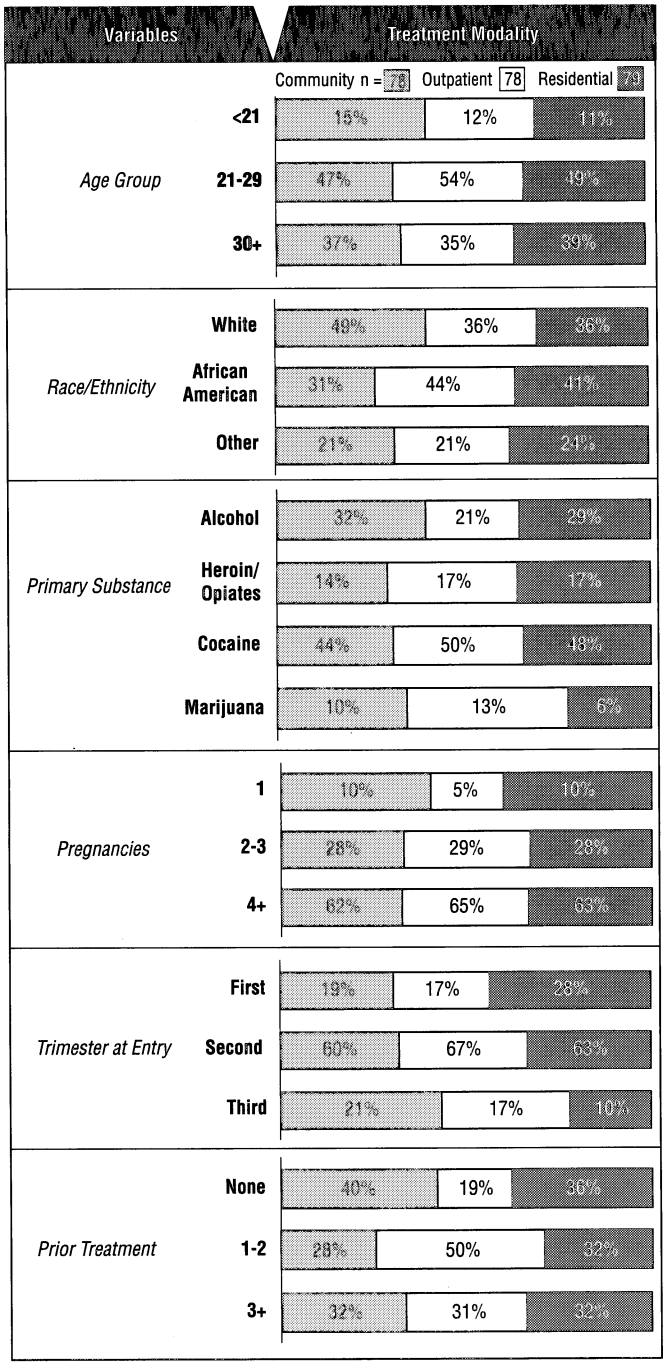
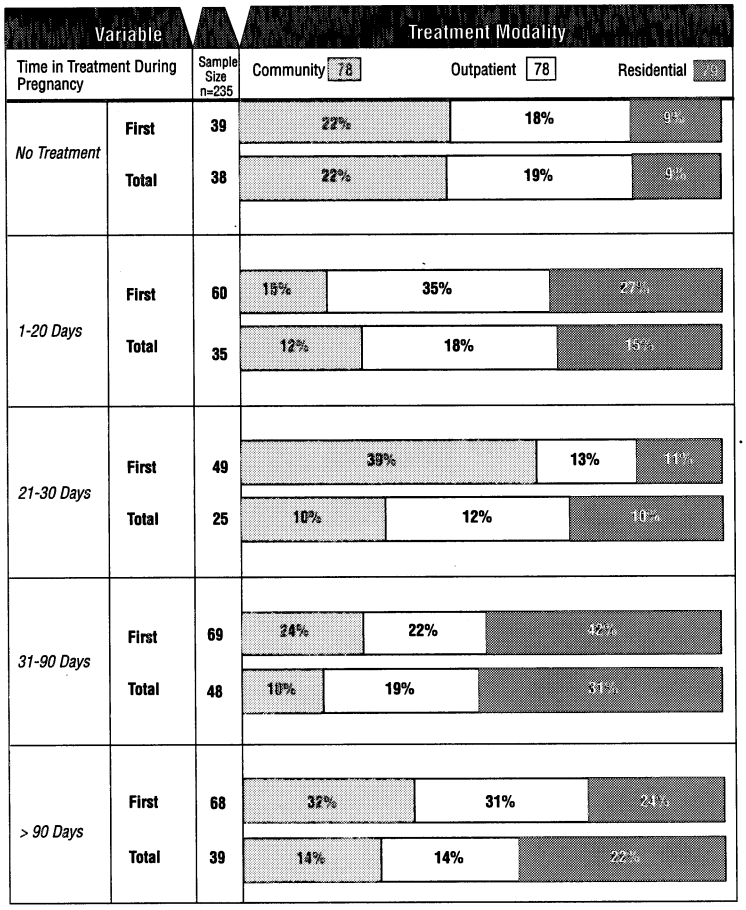


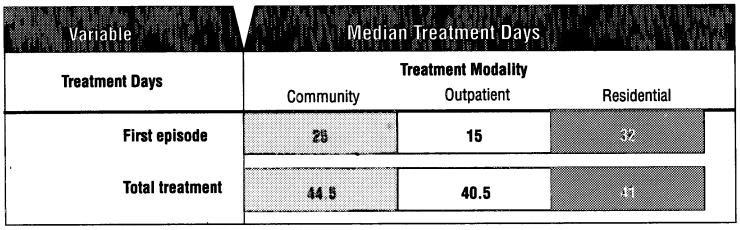
Figure 5: Characteristics of Random Assignment



Characteristics of random assignment: Characteristics of women assigned to the three treatment groups were compared using categorical data analysis and Chi-square statistics for hypothesis testing (Fleiss 1981). With the exception of more frequent prior chemical dependency treatment among women randomized to the intensive outpatient group, the groups were similar at enrollment. This finding of similarity is important because any differences in pregnancy and treatment outcome should not be related to differences in age, race, primary drug used, gestational age at entry, or previous pregnancy history, but rather to treatment and events during pregnancy.

Figure 6: Treatment Days in First Treatment Episode and Total Treatment Days During Pregnancy





Treatment days during pregnancy: The number of days women participated in chemical dependency treatment during pregnancy were aggregated in two ways: (1) the number of days in treatment from the time of study enrollment until dropping out of the first treatment episode during pregnancy, and (2) the total number of days, continuous or discontinuous, participating in treatment while pregnant.

The number of treatment days were categorized as none, 1 to 20, 21 to 30, 31 to 90 days. Community treatment centers had program lengths of 21 to 30 days and the MOMS Project treatment program defined the first phase of treatment as ending at 30 days. The category of 1 to 20 days would encompass early drop-out from community and MOMS Project treatment program. The number of days recorded in treatment were determined through the MOMS Project treatment records, interview information for women participating in community treatment, and surveillance of TARGET treatment databases in Washington State and Medicaid treatment databases.

Figure 6 shows that analysis for women in treatment during their first treatment episode after enrollment have women assigned to residential treatment with the lowest rate of receiving no treatment (9 percent) and the highest proportion of women staying in treatment for more than 30 days, (53 percent) compared to 33 percent for comprehensive outpatient and 24 percent for community treatment.

Total treatment received at any time in pregnancy may have been in multiple episodes in different treatment programs between enrollment and delivery. The total number of treatment days during pregnancy were similar for women regardless of assigned group, suggesting that women often re-entered treatment after a break in treatment program. A greater proportion of women in MOMS residential treatment stayed in treatment over 30 days in their first episode. However, when taking into account all treatment received during pregnancy, women in all treatment modalities, regardless of assignment, had similar treatment duration.

Figure 7a: Hazard of Treatment Dropout

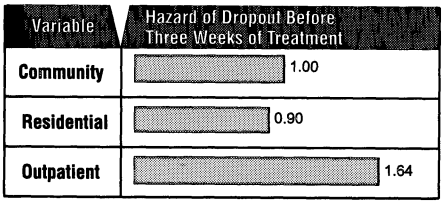
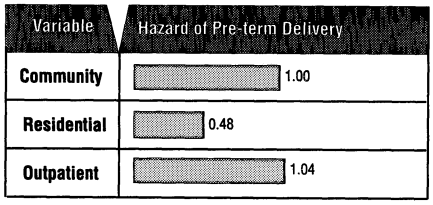


Figure 7b: Hazard of Pre-term Delivery



Hazards of Treatment Dropout: Since the minimum stay for completion of any of the treatment programs in which a women assigned to community treatment may have participated was 21 days, the *hazard of dropping out* of chemical dependency treatment before 21 days was assessed in each group.

Women assigned to the comprehensive outpatient group had a 1.64 times higher rate of dropout by 21 days than did the short-term residential or community treatment groups (Figure 7a). The women assigned to community treatment could be in outpatient or residential treatment.

Thus, women assigned to strictly outpatient treatment were more likely to drop out despite the comprehensive nature (all day program with meals, parenting classes, etc.) of the treatment and enhanced case management services, which were identical to the residential treatment group.

Hazards of Pre-term Delivery: Pre-term delivery among the three treatment arms was assessed as the outcome variable. The time-to-event variable was the number of weeks of gestation from study enrollment until women delivered pre-term or passed the window of risk at 37 weeks gestational age. Women were censored from follow-up data when they delivered pre-term or were no longer at-risk of pre-term delivery.

Pre-term delivery for dropping out of treatment early (before 21 days of treatment) was assessed as the outcome variable. The time-to-event variable was the number of treatment days during the first episode of treatment after study enrollment.

Pre-term delivery (< 37 weeks' gestation) rates were similar in the intensive outpatient and community treatment arms, but the risk of pre-term birth was reduced to half among women in short-term residential treatment (Figure 7b).

Although total chemical dependency treatment days during pregnancy did not differ between groups, pregnancy outcomes were better among women assigned to comprehensive, short-term residential treatment, suggesting added benefit from the residential component.

Study Implications: Offering residential chemical dependency treatment to pregnant women appears to enhance treatment compliance and completion although even after dropping out of one program, pregnant women often re-enter treatment. Thus, pregnant women should be encouraged to re-enter treatment and residential treatment should be readily accessible to pregnant women. Residential treatment resulted in improved compliance, even compared to comprehensive outpatient treatment in the same facility. Most importantly, residential as opposed to outpatient treatment resulted in lower rates of pre-term birth, therefore, offering savings in neonatal hospital costs and potential long-term infant and childhood morbidity.

E. Obstetrical and Neonatal Outcomes by Duration of Chemical Dependency Treatment during Pregnancy

By D. Heather Watts

Background and Rationale: Improved pregnancy outcomes have been reported among substance abusing methadone and heroin users women receiving prenatal care compared to those not receiving care (McCalla 1991). However, the potential benefit of chemical dependency treatment has not been systematically examined. We evaluated the duration of chemical dependency treatment during pregnancy and pregnancy outcome for women enrolled to the MOMS Project.

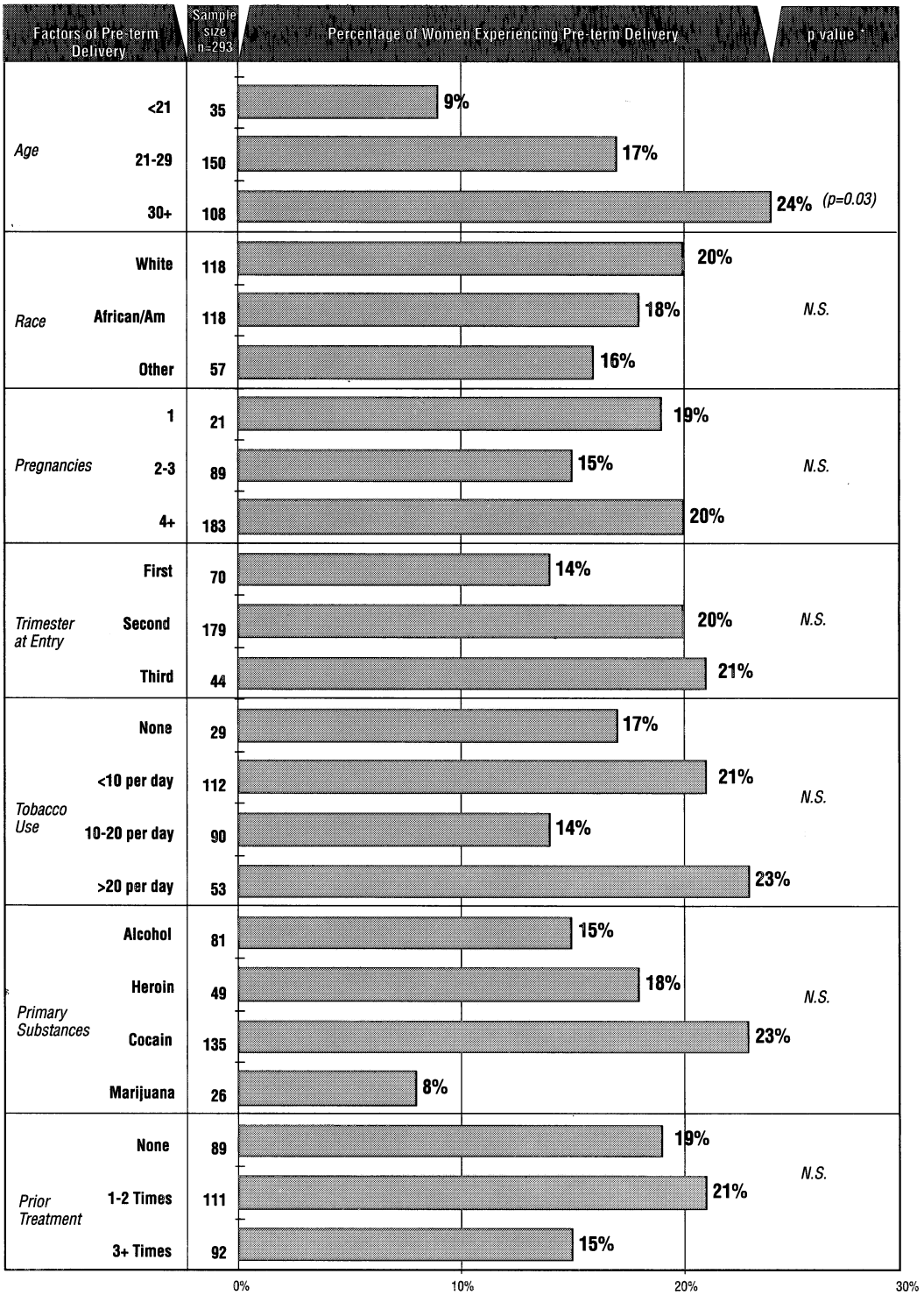
Study Objective: To evaluate the relationship between length of stay in chemical dependency treatment during pregnancy and obstetrical and neonatal outcomes among a group of severely chemically dependent pregnant women.

Methods: Inclusion criteria and baseline assessment have been previously described. Treatment days were verified by using the Washington State TARGET and Medicaid databases. Birth outcomes were abstracted from maternal and infant hospital records. All project enrollees with complete treatment and obstetrical data were included (n = 293).

Figure 8: Client Demographics by Factors Potentially Associated with Pre-term Delivery

Results: The factors potentially associated with an increased risk of pre-term delivery, the most common adverse pregnancy outcome, were assessed in the entire group (Figure 8).

Among the demographic and behavioral characteristics, only older age (over age 30) was associated with an increased risk of pre-term delivery under 37 weeks (p=0.03). Race, number of pregnancies, tobacco use, primary drug, prior substance abuse treatment and trimester at study enrollment were not significantly related to pre-term birth.



"p" value indicates level of significance (A "p" value of 0.05 or less shows statistically that a group differed significantly when compared across variables.)
N.S. indicates no significance.

Figure 9 shows that while not significant (at the p=0.05 value level), women with no treatment during pregnancy had an increased risk of pre-term birth (28 percent) compared to women with treatment up to 21 days (21 percent) and women with more than 21 days of treatment (14 percent). Women with longer treatment stays during pregnancy tended to have a lower rate of pre-term birth.

Other obstetrical complications evaluated included pregnancy-induced hypertension, pre-term labor not leading to pre-term birth, and cesarean section rate. These complications were not related to duration of chemical dependency treatment during pregnancy.

Figure 9: Chemical Dependency Treatment and Pre-term Delivery

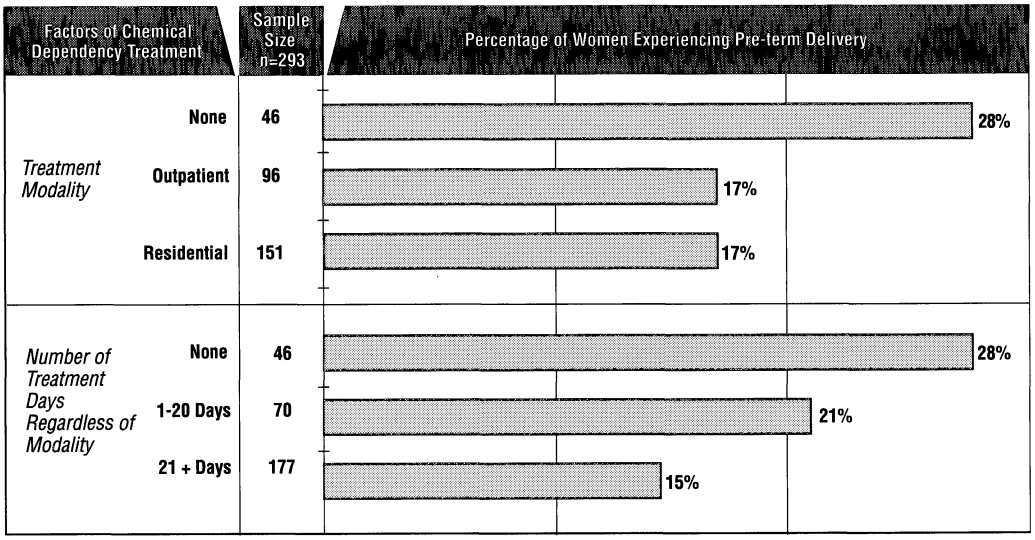


Figure 10: Neonatal Complications and Duration of Treatment During Pregnancy

Days in Treatment	Stillbirth	> 7 Hospital Days	Birthweight <2500 gm	Small for Gestational Age
0	9%			
1-20	4%	21%	29%	26%
21-30	0%	18%	20%	23%
31-90	3%	14%	23%	22%
> 90	0%	7%	11%	18%
p value	*0.03*	*0.05*	*N.S.*	*N.S.*

A "p" value of 0.05 or less shows statistically that a group differed significantly when compared across variables. N.S. indicates no significance.

Several infant complications were reduced among women with longer treatment stays during pregnancy (Figure 10). Stillbirths were highest among women with no treatment during pregnancy with a remarkably high rate of 9 percent. Birth weight below 2500 grams, a marker for an increased risk of infant morbidity and death, tended to decrease as treatment stay increased. The rate of small-for-gestational-age infants was not different between groups, suggesting an effect early in pregnancy of chemical exposure, not reversed with treatment. The rate of infants requiring hospitalization for more than seven days also decreased with longer treatment stays, suggesting savings on neonatal hospital costs.

When the hazard is less than one, this represents a reduction in pre-term birth. For instance, the rate of pre-term birth among women with more than 90 days of treatment was 0.25, or one-quarter that of women with no treatment or under 20 days of treatment. Looking at it another way, the risk of pre-term birth was reduced by 75 percent among women with more than 90 days of treatment.

Study Implications: Women with a longer duration of chemical dependency treatment during pregnancy had a lower rate of pre-term birth, stillbirth, low birth weight, and prolonged neonatal hospital stays. Chemical dependency treatment, including both intensive outpatient and residential treatment, must be available for all substance abusing pregnant women. It is crucial that outreach services be provided to identify chemically dependent pregnant women early in pregnancy and encourage them to enter treatment.

F. Adolescent Population

By *James Farrow*

Background: There has been little research comparing chemically-dependent adolescent and adult women on characteristics of treatment outcomes for chemical dependency. Moreover, little is known about how pregnant adolescents fare in adult treatment settings and how they can be recruited and referred to appropriate treatment.

Methods: This component of the MOMS Project research reports a description of pregnant adolescents (subjects were 16 to 19 years old (n=21)) in treatment for substance abuse who were followed for at least 90 days after treatment initiation. Selected teen/adult comparisons are also presented. For the analysis, adolescent subjects' outcomes were compared with 323 adult women (mean age 27.4 years).

Results: Most adolescent subjects were age 19 (range 16-20) at the time of enrollment. One- third were Caucasian and never married. The majority had attended some high school. Two-thirds of the adolescents lived with a family member, partner, or friend, however, 19 percent had no stable living arrangement. Almost half of these adolescents had at least one previous live birth. The adolescent subjects primarily used tobacco, alcohol, and marijuana. When compared to the adults in the program, there was a statistically significant difference, primarily based on more injection drug use, of opiates among the adult women. Two-thirds of the adolescents had no prior substance abuse treatment experience compared to less than half of adult subjects. With respect to the number of days in treatment, adolescent, and adult stays were comparable. Twenty-seven percent of the adolescents and 32 percent of the adults stayed in treatment longer than 90 days.

Obstetrical indicators and infant delivery measures were collected. With respect to pregnancy outcomes, there were no statistically significant differences between adolescents and adults with nearly 90 percent in both groups delivering live infants. There were comparable rates of pregnancy termination, term gestational age at delivery, use of Cesarean section, and experience of pregnancy complications such as hypertension.

With respect to the status of infants, again there were no significant differences between adolescents' and adult women's infants with similar rates of respiratory distress syndrome and hyperbilirubinemia. There were no symptoms of drug withdrawal in any of the infants born to adolescent mothers.

Implications of Findings: This study points out that adolescents who are pregnant show a similar profile to their adult counterparts. There were several interesting differences between the adolescents and their adult counterparts with respect to demographic characteristics and previous treatment experience. This study also points out that injection drug use and opiate abuse specifically are much less common in adolescents entering treatment. This study further points out that tobacco use, and probably nicotine dependence, a complicating factor in pregnancy, is very common in all age groups. The length of stay in treatment appears not to be significantly different for adolescents as compared to adult women, indicating that adolescents, 16 to 19 years old, engage in treatment about as well as adult women, and that they may be able to benefit from programs designed for adult chemically dependent women.

The relatively small number of adolescents involved in this research and demonstration program for pregnant chemically dependent women points out the difficulty in recruiting adolescents into treatment, especially treatment with a research component. Direct recruitment of adolescents into treatment is complicated by the fact that teen substance abusers tend to segregate themselves from adults and to avoid interactions with them. A number of factors, such as homelessness, delinquency, incarceration, and other psychosocial circumstances which posed a significant hurdle for direct recruitment of adolescents into the MOMS Project are described in Section V., B. Outreach.

In summary, combining adolescent and adult pregnant women who are in need of chemical dependency treatment is generally supported by this study. (Farrow, Watts, Krohn, and Carmichael Olsen, 1998)

G. Psychosocial and Parenting Client Description at Baseline

By Heather Carmichael Olson

The research objectives for this portion of the MOMS Project were to gather data on the life context, drug use, psychosocial characteristics, family history, number of children, and parenting attitudes of chemically dependent mothers who were offered treatment while pregnant. Descriptive statistics were used to generate data reported here for this baseline sample (n=262 (46 pilot + 216 randomized).

Figure 12: Women Considered at-risk on Psychosocial Measures at Baseline Assessment

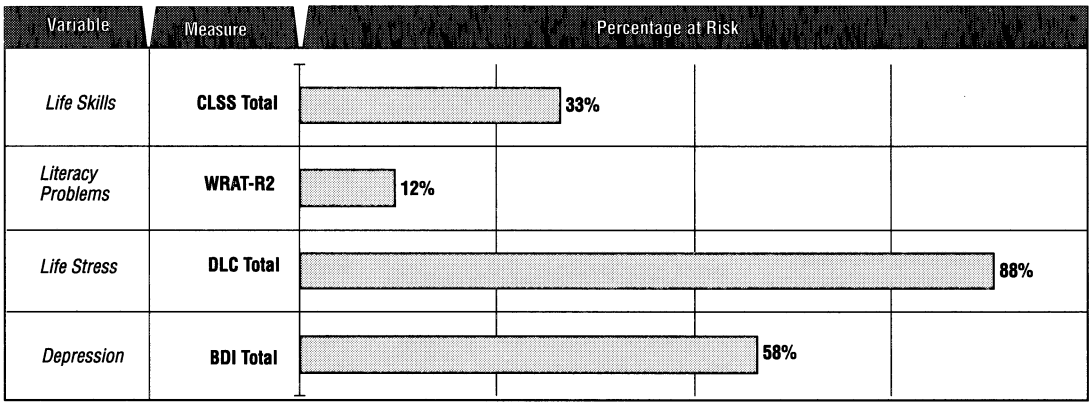
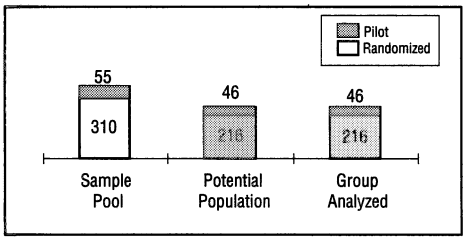


Figure 11: Sample Size: Psychosocial Profile



Results

A majority of the women in the project (77 percent) reported some type of maltreatment during their own childhood, and 20 percent, a sizable percentage, described current domestic violence.

The large majority of women who were already mothers when they enrolled in the MOMS Project had a total of 472 living children previously born to them. These children were clearly at-risk. At the time of baseline assessment, 12 percent of these mothers reported that their children were being abused.

Generally, the self-report interview and questionnaire data sketch a picture of women who entered the research project highly distressed, with a high rate of depression (among other mental health problems), considerable stress in their lives, and often little social support. Academic screening revealed a concerning percentage with serious literacy problems. Interestingly, a majority of women in the MOMS Project responded to a structured life skills interview with answers indicating an adequate overall level of practical life skills, though about a third of the sample were still considered at-risk.

Many women identified difficulties in areas such as handling finances, keeping track of appointments, and getting regular exercise. Responses on a parenting inventory indicated normative child rearing attitudes in three (of four) domains, with a larger than expected proportion of the sample (52 percent) giving answers indicating inappropriate developmental expectations of children.

Study Implications: Most participants in this subsidized treatment project had multiple and serious needs. Study findings fit with prior literature on women who were chemically dependent, which described a history of childhood maltreatment, adult mental health problems, difficulties with social support, and a spectrum of parenting concerns (e.g., Bays, 1990; Davis, 1990; Teets, 1995).

Services must be comprehensive to adequately provide for women with varied patterns of polydrug use—who typically have concurrent mental health problems and limited social support— and who are often also functioning in a parenting role. The services should include mental health and alcohol/drug treatment, as well as peer and family support. Such services should teach practical life skills (e.g., financial and leisure time planning, literacy), as well as parenting skills (e.g., learning about normal child development, how to protect a child from abuse, decisions about out-of-home placement). Screening should be conducted to identify clients at-risk, and involved in issues of domestic violence.

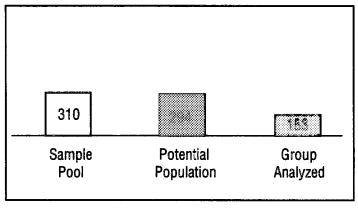
H. Psychosocial, Parenting and Infant Outcomes

By *Heather Carmichael Olson*

Study Objectives: Study objectives were to ascertain women's self-reported psychosocial status approximately one year after enrollment; parenting skills and infant outcome when the children reached about four months of age; and examine the impact of treatment modality and treatment intensity on maternal and child outcome when the child reached age four months.

Sample Size: This follow-up study focused on randomized clients and/or infants born to randomized clients who participated in at least one follow-up visit. Sample sizes and descriptions are given for each section (Figure 13). These vary depending on the subjects appropriate to and available for each analysis. Sample sizes decrease over time due to fetal/infant demise and caregiver dropout, so findings must be interpreted with caution.

Figure 13: Sample Size: Psychosocial, Parenting, Infant Outcomes



Data Analysis: To examine the representativeness of follow-up participants, women and infants who were part of the follow-up sample (total n = 153) were compared to enrolled nonparticipants appropriate for this comparison (total n = 141). Although there were few differences, such as lower IQ among nonparticipants, groups were essentially similar on measures of drug use and addiction severity, demographics, selected baseline psychosocial characteristics, and birth outcome variables, using t-tests for continuous variables and chi-square tests for distributions of categorical variables. Those not participating in follow-up probably obtained less treatment. Most clients in the follow-up study received some amount of treatment.

The wide range of measures and relatively small sample sizes for different follow-up assessments dictated the use of univariate statistics. This increases the risk of chance findings, so that significant differences should be interpreted very carefully. However, given the difficulty and importance of creating change in maternal and infant outcome, especially among families struggling with chemical dependency, any significant findings should be of considerable clinical interest.

Results: Analysis of data from follow-up participants indicated no significant differences by treatment modality on maternal psychosocial status, parenting outcomes, or (for infants living with their birth mothers) follow-up infant outcomes. Combining follow-up data from the three randomized groups (and, thus, examining the collective impact of all types of treatment), Figure 14 shows significant changes in women's self-reported psychosocial status from baseline to follow-up approximately one year after study enrollment.

At study entry, the majority of women showed notable levels of depression (and psychological distress), life stress, and social isolation. After treatment, there was improvement on several indicators.

For example, when initially assessed, 58 percent of the follow-up participants reported moderate to severe depression, compared to 22 percent at follow-up. At the baseline assessment, almost all of the follow-up subjects (88 percent) reported notable life stress. Although at post-test, a little over half of this group (57 percent) still reported notable levels of difficult life circumstances, there was a clear drop in stress by the four-month assessment.

The impact of treatment intensity on maternal outcome was complex. Changes in depression and life

Figure 14: Self-Reported Maternal Psychosocial Status at Baseline Assessment and Follow-up

Measure	Percent Beyond Clinical Cutoff	Score	
	Baseline / Follow-up	Average	Std Dev
Depression	58% / 22%	20.0 / 11.2	11.7 / 8.0
Life Stress	88% / 57%	10.4 / 6.5	3.8 / 3.8
Life Skills	33% / 1%	24.7 / 20.2	4.4 / 3.1
Parenting Attitudes	26% / 19%	122.9 / 119.2	16.6 / 15.8

Std dev. - Standard Deviation

stress were most interesting from a clinical perspective. After antepartum treatment, for the entire follow-up sample examined in these analyses, scores from these two outcomes show a drop almost down to (or below) risk cut-off scores.

Interestingly, before intervention, women who eventually stayed in treatment for three months or more, were already reporting less depression than those remaining in treatment for a shorter period of time. In addition, the group staying in treatment for a longer period of time reported significantly less stress at the four-month assessment than their counterparts leaving treatment earlier.

As shown in Figure 15, the 87 infants living with their birth mothers in follow-up, overall appeared to show development and behavior well within normal limits at four months of age. However, there was an elevated rate of neuromotor risk in this follow-up.

Study measures show that parenting attitudes and behavior were typically positive for follow-up participants parenting their children, regardless of treatment modality or intensity. (Samples sizes were small as shown in Figure 15. Note that 65% of infants remained with their birth mothers at age four months). Overall scores were within normal limits on most parenting outcomes, including measures such as parenting stress, maternal interaction with the child during free play (not shown in figure), and the quality of developmental stimulation in the home.

There was one concerning sign: about one-fourth of women in the follow-up study still parenting their babies received NCAST Teaching Scale Mother Total scores falling below the tenth percentile, based on recent norms adjusted for ethnicity. This indicates elevated risk within this sample in a clinically important assessment situation in which the mothers attempted to teach their young infants a challenging developmental skill.

Figure 15: Overall Infant and Parenting Outcome at Four Month Infant Follow-up

(Assessment for 65% of Infants still with Birth Mother n=87)

Measure	Percent Beyond Clinical Cutoff	Average	Standard Deviation
Bayley Mental Dev. Index	1%	107.3	12.9
Bayley Psychomotor Dev. Index	6%	104.1	13.7
MAI-ST Risk Score	44%	2.8	2.8
NCAST Behavior RatingsTotal child score	17%	12.4	3
Parenting Stress Index Total	17%	66.1	14.5
HOME Total	13%	34.8	3.9
NCAST Teaching Scale Mother Total	24%	36.6	5.8

Study Implications: Findings of this study must be interpreted carefully because of reduced sample sizes and concerns about the generalization of these results to the broad population of women offered comprehensive services. But these findings do echo the cautious optimism about intervention for chemically dependent pregnant women found in studies available so far.

With treatment, which most in this follow-up study received, women reported less stress, lower levels of depression, and better life skills one year after study enrollment. The women in the follow-up study typically displayed positive parenting attitudes and behavior in teaching, free play, and in the home environment. The global developmental status and behavior of infants remaining with their birth mothers was within normal limits.

However, not all birth mothers retained custody of their children. For those who did, there remained signs of concern in both mother and child outcome, even in this largely treated follow-up sample, which argue the importance of working to further improve services for this population. Babies in the MOMS Project showed an elevated rate neuromotor risk at about four months of age, when assessed with an instrument (MAI-ST) that has some ability to predict mental and behavioral status at about age 1.

Mothers in the MOMS Project still caring for their babies showed an increased rate of at-risk interaction with their infants, in spite of the treatment most received. This is of particular concern since many of these women were still in their prime childbearing and parenting years. Both these findings underline the importance of family support services as part of the intervention package available to chemically dependent mothers, especially for those women raising a biologically vulnerable child or struggling with their parenting skills. These findings also emphasize the importance of looking more closely at neuromotor outcome in drug-exposed children and interaction between the chemically dependent parent and her child [Section VI., J., (1), (2)].

Differences between treatment modalities did not show up in differential maternal and child outcome. There may be many reasons for the absences of differences between treatment

modalities at follow-up: insufficient sample size to reveal the effect; follow-up time too short to reveal a difference in modality; that any form of treatment is adequate to effect change at this early point in recovery; and that the community standard of services improved dramatically during the tenure of the MOMS Project.

Higher treatment intensity, defined as remaining in antepartum treatment three months or more, did appear to have a positive— if complex— impact on certain aspects of maternal psychosocial outcome. It may be that women remaining for more treatment were those more motivated in the first place. Sorting out what is involved in treatment retention should be a high priority in treatment research for women.

I. Secondary Analysis

(1) Antepartum Drug Abuse and Pre-term Delivery: Is the Risk Accounted for by Co-Factors?

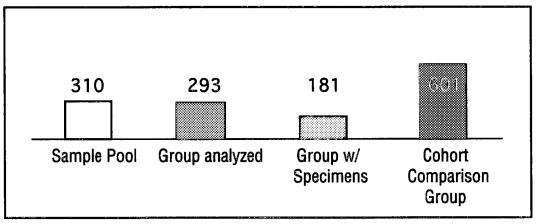
By *Marijane Krohn*

Background and Rationale: Emphasis on primary prevention has led to an interest in intervenable risk factors such as tobacco use, illegal drug abuse, and maternal genital infections during pregnancy. It is widely recognized that women often have two or more of these same risk factors for pre-term delivery, such as tobacco use and illegal drug abuse during pregnancy, and genital infections (Slutsker 1991). However, few investigators have measured these concurrent risk factors among the same women and determined whether they have independent effects on the risk of pre-term delivery.

Study Objective: The purpose of this study was to determine whether the risk of a pre-term low birth weight delivery associated with drug abuse during pregnancy may be accounted for by other risk factors for pre-term delivery. These risk factors and risk markers are more frequent among drug abusing women. They include race/ethnicity, mother's age, number of previous pregnancies, tobacco use during pregnancy, and maternal genital infections during pregnancy.

Methods: This study is presented as a secondary analysis of women enrolled to two different studies at two different time periods at the University of Washington Medical Center, Seattle, Washington. The study design is a prospective, double cohort study. Women referred for substance abuse treatment during pregnancy in the MOMS Project formed the first cohort (n = 293, 181 of these had genital specimens). Women in the second cohort (n = 601) were attending the UWMC associated clinics for routine prenatal care and enrolled into a study of vaginal bacteria during pregnancy between 1984 to 1986 (Krohn 1989, Hillier 1991). These women were not seeking drug treatment during pregnancy and were questioned on their use of heroin/methadone and cocaine use since they were pregnant. Both cohorts of women were enrolled between 16 and 30 weeks gestational age.

Figure 16: Sample Size: Antepartum Drug Abuse and Pre-term Delivery



Results: A comparison of characteristics of the substance abusing cohort (MOMS Project clients) compared to non-drug taking women showed that women referred for a drug treatment program were more likely to be African-American (37 percent versus 15 percent) or Hispanic (20 percent versus 2 percent) than the reference group of women. They are also more likely to be older. Substance abusing women were also more likely to smoke cigarettes during pregnancy than was the reference group of women.

Drug dependent women were more likely to be colonized with N. *gonorrhoeae* or with T. *vaginalis* than were women not abusing drugs during pregnancy. Drug abusing women were less likely to have a cervical C. *trachomatis* infection but were more likely to have bacterial vaginosis.

Adjusting the risk of a pre-term low birth weight delivery associated with drug dependence for any STD, number of cigarettes per day, and the number of prior pregnancies lowered the risk compared with the unadjusted risk. The risk of a pre-term low birth weight delivery adjusted for bacterial vaginosis, number of cigarettes per day, and the number of prior pregnancies changed it very little from the unadjusted risk.

Study Implications: The findings from this report extend to other studies in that they assessed the risk of pre-term low birth weight associated with drug dependency during pregnancy after controlling for tobacco use during pregnancy, the number of prior pregnancies, and the concurrent effect of genital infections and syndromes. The estimate of risk adjusted for tobacco use during pregnancy, number of prior pregnancies, and bacterial vaginosis indicates that drug dependency during pregnancy has a substantial and statistically significant risk for pre-term low birth weight, in addition to that associated with smoking and genital infections.

(2) Profile of Women At-Risk for Refusing or Under-Utilizing Treatment Services

By *Jean Lanz*

The Project conducted analyses on women who failed to enter treatment (admission failures), and women who failed to access post-delivery medical and psychosocial services. The women were assessed for differences across demographic characteristics including criminal, social service, mental health, family violence and chemical dependency treatment histories, and for delivery outcomes. These analyses were done in an effort to construct psychosocial profiles for women who failed to participate fully in the project. The purpose of the analyses was to determine if recruitment and case management techniques might be modified to reach these women more successfully.

Results: Subjects were defined as "treatment admission failures" (n=48) if they were randomized to the MOMS treatment modalities and either refused their treatment assignment or failed to appear for treatment. When compared by treatment admission, these women did not differ significantly on demographics, family violence histories, or chemical dependency treatment histories.

The women who failed to enter treatment did differ for the following characteristics (p=0.05): they were (a) significantly more likely to identify their friends as substance-users; b) significantly less likely to have been treated with psychotropic medications; and c) significantly more likely to deliver a pre-term infant.

Subjects were defined as "research follow-up failures" (n=63) if they failed to complete any of the post-delivery appointments involving medical and psychosocial assessment of mother and child. The only difference noted between the women who successfully completed follow-up appointments and those who did not was that follow-up failures were significantly more likely to identify their friends as substance-users (p=0.05).

Study Implications: While neither of these analyses produced dramatic results, the findings support other research regarding the impact of substance-using friends on treatment success, as well as this project's overall findings regarding the higher risk of pre-term delivery for women who fail to access treatment.

J. Follow-up Sub-studies

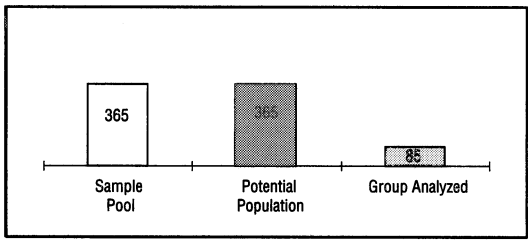
By *Heather Carmichael Olson and D. Heather Watts*

(1) Predictors of Decline in Developmental Scores Among Infants Born to Substance-Abusing Women

Background and Rationale: A large number of children born prenatally substance-exposed are often being raised solely by their biological mothers in homes struggling with addictive behavior and recovery. The MOMS Project measured a variety of developmental influences, prenatal and early child characteristics (such as substance exposure and birth weight), which were strong predictors of early infant behavior and development (Carmichael Olson, Hanna, & Toth-Sadjadi, 1996). However, recent literature argues for the need to examine aspects of the postnatal environment as notable contributors to a drug-exposed child's outcome over time— particularly the parenting attitudes and interactive behaviors of chemically dependent mothers (Mayes, 1995).

Study Objectives and Overview of Sample and Methods: The goal of this sub-study was to identify potential risk factors for decline in developmental status over the first year of life, as measured by the Bayley Scales of Infant Development (Bayley, 1969), in infants born to 85 pilot and randomized subjects who attended both first and second post delivery follow-up visits. In the MOMS Project, only a sub-sample of infants could be followed through age one year because of funding constraints.

Figure 17: Sample Size: Predictors of Decline in Developmental Score

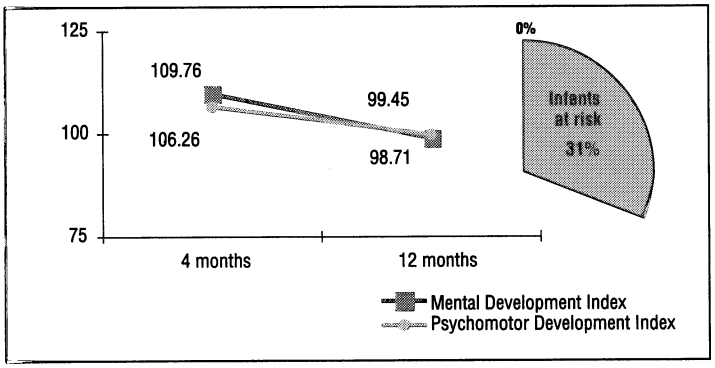


Data analysis techniques included descriptive statistics and t-tests to examine overall drop in child developmental outcome and MANOVAs to determine which factors were significantly associated with a decline in infant outcome scores for each of the caregiver and infant domains. Due to the small sample size, results should be interpreted with caution.

Results: Maternal and child characteristics were generally similar to those reported for the larger follow-up group. Of note is the fact that of the 85 infants followed in this sub-study, 73 percent were cared for by their biological mothers throughout the follow-up period. As a whole, the infants remained within the normal range on mental and motor skills over the first year of life.

- Study showed significant decrease in Bayley Mental Developmental Index (MDI) and Psychomotor Developmental Index (PDI) scores from 4 to 12 months of age in the overall follow-up sample,
- Slightly more than one-third (37 percent) of these babies showed a notable drop in their MDI scores over time (i.e., a decrease of 15 points or more between lab visits), while only a few (9 percent) showed an equivalent increase.

Figure 18: Meaningful Decline in Infant Developmental Scores



Approximately one-third (31 percent) of the infants consistently cared for by their birth mothers (n=62) were at-risk for developmental decline in mental skills (Figure 18). The definition of "meaningful decline" in MDI over time is defined as drop in MDI scores of 15 points or more from 4 to 12 months, coupled with a 12-month MDI score below the standardized mean of 100.

- Findings revealed that the significant predictors of meaningful decline in infant mental status over the first year of life were measures of problematic maternal cognitive growth fostering interactions with their babies.
- Maternal characteristics, such as intellectual status or self-reported level of depression, may also have a mediating influence on meaningful developmental decline in the infant's mental skills.

Study Implications: Findings of the present sub-study underline the additional need to provide intervention which explicitly teaches parents how to foster the cognitive development of their young substance-exposed infants through appropriate and high-quality parenting interactions. Such intervention must take into account the mother's intellectual and emotional status, as well as her recovery progress, and can be accomplished through family support services, such as parenting support groups, parent participation in therapeutic childcare, and/or individualized child mental health services.

It may also be important to give the child supplemental developmental stimulation in the form of high-quality therapeutic childcare. Recent literature emphasizes the importance of providing family support to women with children within a chemical dependency treatment context (Kaplan-Sanoff & Rice, 1992; Van Bremen & Chasnoff, 1994), and has begun to contend with the practical challenges that family-centered treatment presents (Metsch et al., 1995).

(2) The MAI-ST: A Motor Screening Tool Useful for Infants Prenatally Exposed to Alcohol and Other Drugs

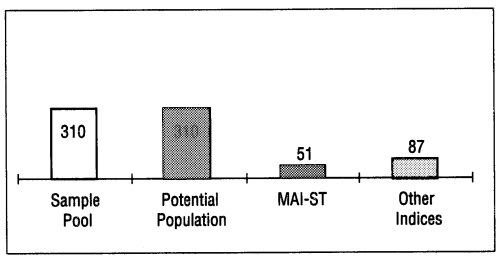
Background and Rationale: Growing numbers of children are at-risk for developmental problems due to prenatal substance exposure. Previous reports have often indicated that alcohol and drug exposed infants have a higher incidence of subtle neuromotor and neurobehavioral deficits, particularly in the first few months of life (Carta et al., 1994; Fetters & Tronick, 1996; Swanson, 1996). Early, accurate, and cost-effective screening of polydrug-exposed infants is critical to determine if more comprehensive developmental assessment is necessary. Yet there are few assessment instruments that have documented utility for the early evaluation of infants born polydrug-exposed.

Study Objectives: This MOMS Project sub-study focused on determining the usefulness of the Movement Assessment for Infants-Screening Tool (MAI-ST; Chandler, 1983). The MAI-ST was administered to a majority of the MOMS Project infants in the first follow-up visit, and a consecutive sub-sample of infants brought in for the second follow-up visit as follows: a) to predict the developmental status of the drug-exposed infants at about age one year; and b) to provide specific information to health care providers on the validity and clinical use of the MAI-ST for infants born substance-exposed.

Interestingly, data from the four-month follow-up visit of the MOMS Project found that the MAI-ST identified neuromotor risk in a sizable number of the infants involved in follow-up, even though these babies performed within normal limits on other developmental and behavioral measures at that point in time (Carmichael Olson, Hanna, & Toth-Sadjadi, 1996). Thus, the MAI-ST did signal possible developmental concerns within this group of infants, and showed some utility as a screening tool given that it was the only assessment instrument identifying elevated risk in this sample.

The utility of the MAI-ST would be demonstrated more strongly if this assessment instrument showed some potential to predict development later on, especially if other early measures did not.

Figure 19: Sample Size: Infant Outcome Analysis



Results: Maternal and child characteristics were, in general, similar to those reported for the larger follow-up group (though those involved in the follow-up study were probably at slightly lower risk than the full MOMS Project cohort). There were no group differences on important maternal and infant characteristics found between the larger group of caregiver-child pairs followed in the MOMS Project and this smaller sub-study sample. The average birth weight (M = 3077.8 grams; SD = 639.2) and gestational age (M = 38.9 weeks; SD = 2.0) of infants in this sub-study sample were broadly within normal limits, but a sizable percentage of these babies appeared to be biologically at-risk. For example, 16 percent were born prematurely and 22 percent were considered small for gestational age at birth.

Figure 20 shows the developmental and neuromotor outcomes for the sample of 51 babies followed in this sub-study. The first follow-up visit typically took place at about four to five months of age, while the second follow-up session occurred on average at about one year, with an interval of approximately eight months between visits. At both visits, this group of infants (on average) scored within normal limits on measures of mental, psychomotor, and behavioral development. However, performance on the MAI-ST did identify a large number of infants as potentially at-risk for neuromotor difficulties. In contrast, at the early assessment visit, the more commonly-used Bayley Scales of Infant Development (BSID; Bayley, 1969) identified almost no babies as at-risk for developmental problems.

Figure 20: Developmental and Neuromotor Outcomes

Measure	Proportion At Risk	Average Index Scores
		12-Month Follow-up / 4-Month Follow-up
Developmental Indices (n=51)	*Clinical Cut-off < 84*	*Range*
Mental Developmental Index	14% 0%	98.61 109.16 (84-146)
Psychomotor Development Index	10% 2%	100.92 104.78 (73-144)
Infant Behavior Record Activity Factor	n/a n/a	13.45 (8-18) 11.73 (5-22)
Neuromotor Index (n=51)	*Clinical Cut-off Index = 3*	*Range*
Movement Assessment for Infants-Screening Full Screen Total Score (MAI-ST)	49%	3.00 (0-11)

Additional analyses showed that MAI-ST Full Screen Total Scores of greater than 6 at four months of age could distinguish a group of 8 children who performed significantly lower on a global test of mental skills and behavior ratings at age one.

Study Implications: Results from this sub-study, arising from limited data but of clear clinical interest, fit with the notion that early neuromotor deficits among polydrug-exposed infants may be indicators of poor neurological organization. These, in turn, may underlie behavioral and developmental problems that emerge over the first year of life, depending on environmental circumstances and vulnerability of the child.

If this notion proves true, it is essential that health care professionals and early interventionists carefully screen the development of infants born alcohol and drug exposed. Based on data presented here and further detailed in Stewart et al., (1997), the MAI-ST may have promise as a brief screening tool for important aspects of later development (at least for the ages and population tested in this sub-study), especially in contrast to more global and time-consuming measures such as the Bayley Scales of Infant Development. Replication of these findings will be important.

(3) Detection of Possible Fetal Alcohol Syndrome in Substance Abusing Pregnant Women and Impact on Treatment Participation.

Background and Rationale: Fetal alcohol syndrome is the leading known cause of mental retardation in the Western world. FAS and the wider range of fetal alcohol effects may lead to significant behavioral problems and learning disabilities in adolescence and adulthood. Drug and alcohol abuse often affect many generations of the same family. Among a group of severely chemically dependent women, many would be expected to have come from families with substance abuse histories, including mothers with drug and alcohol use during pregnancy.

Study Objectives: The focus of this sub-study was to evaluate chemically dependent women for physical, historical, and cognitive findings consistent with alcohol effects.

Another focus of this sub-study was on assessing participation in chemical dependency treatment by women with and without probable fetal alcohol effects.

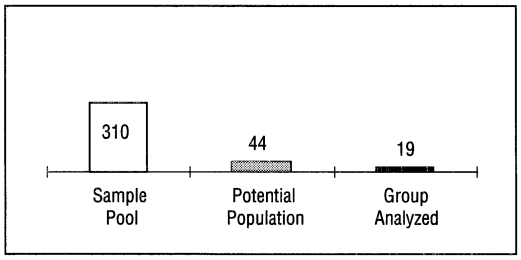
Methods: We evaluated women for a constellation of physical features, maternal histories, school difficulties, and social skill deficits which may be indicators of significant in *utero* alcohol exposure. We assessed the relationship of possible fetal alcohol effects to treatment stay through an interview and physical examination.

Diagnosis of probable fetal alcohol syndrome was made if the patient had a history suggestive of maternal alcohol use and positive findings in at least two of the other three categories: physical examination, WRAT (reading level $\leq$ 4th grade level)/Shipley IQ test ($\leq$ 70) and social skills test ($\leq$ 18 of 22). Possible fetal alcohol syndrome was diagnosed if findings were positive in two of the four categories. Nineteen (43 percent) of the 44 patients approached agreed to participate in this sub-study.

Results: Four patients (20 percent) had probable FAS and three (16 percent) had possible FAS. Of note, the four women with probable FAS all stayed in treatment for over 28 days after enrollment compared to only 50 percent of the possible or non-FAS. Median treatment days for women with probable FAS was 73 compared to 42 for the remainder ($p = 0.04$).

Study Implications: Probable FAS, based on history, physical findings, and life skills, was surprisingly common in this group of severely chemically dependent women. Contrary to our hypothesis, women with FAS were more compliant with treatment during pregnancy, possibly because of the structured environment. The frequency of probable FAS underscores the need for outreach and treatment services for chemically dependent women to prevent fetal damage and break the intergenerational cycle of substance abuse.

Figure 21: Sample Size: Fetal Alcohol Syndrome Sub-study



K. Post Intervention Follow-up - One and Two Years Post Partum

Introduction

The study population for Study K(1), Case Management, includes women enrolled in the MOMS Perinatal Research and Demonstration Project. It also includes other women who delivered in the catchment area between July 1991 and December 1994 and were identified as having a substance abuse problem as noted on a Medicaid reimbursable claim and/or on the state substance abuse treatment database (TARGET). Study K(2) and Study K(3) are comprised of women enrolled in the MOMS Project between January 1, 1992, and June 30, 1994. Women were included in these studies that could be matched to birth certificates and thereby linked to other administrative databases on public service use and costs.

Service use and costs for the three studies presented in this section were identified, unduplicated, and aggregated across administrative databases by Department of Social and Health Services, Research and Data Analysis. For Study K(2), selected one-year postpartum outcomes were analyzed by duration of perinatal chemical dependency treatment. Study K(3) includes analysis of selected postpartum outcomes of MOMS Project participants by treatment modality.

Identifying information from the MOMS Project was used to link women and their infants to the following databases:

- **FirstSteps Database:** constructed from Medicaid claims and eligibility information and infant birth and death certificates.
- **Warrant Rolls:** income assistance under AFDC, general assistance, state supplemental SSI, related childcare, and food stamp benefits.
- **Social Services Payment System Payment History:** state payments for community-based residential treatment, foster care, and related services.
- **TARGET:** Treatment and Assessment Report Generation Tool, the state substance abuse treatment tracking system.
- **CAMIS:** Case and Management Information System for child welfare services, including child protective services and foster care services.

Substance abuse treatment and medical care are identified uniquely for the mother or mother/infant pair. Child protective services and foster care, however, may pertain to other children in the family.

Costs of services were based on actual state or Medicaid reimbursement for that service when available. If reimbursement amounts were not available, they were estimated by applying state or Medicaid reimbursement rates to the observed quantity of service. Payments for child protective services were imputed based on average monthly costs. All costs were adjusted to 1996 dollars.

(1) Impact of Maternity Case Management on Utilization of Services

by Jean B. Lanz, Joyce H. Huber, Teri Hall

Study Objectives: This study examines the impact of maternity case management on clients' utilization of substance abuse treatment and medical care. It was hypothesized that intensive maternity case management would increase pregnant women's access to substance abuse treatment and prenatal care.

During implementation of the MOMS Project statewide Medicaid prenatal legislation, called First Steps, was enacted.

First Steps Case Management: The First Steps legislation, passed in Washington State in 1989, was directed to improve the birth outcomes of low-income pregnant women. A major component of the legislation focused on outreach and case management services to identify eligible women and to provide assistance in obtaining prenatal medical care and other services, including substance abuse services.

MOMS *Project Case Management:* Women identified as eligible for the MOMS Project (under 28 weeks gestation) received intensive outreach and case management services toward the goal of their enrollment in substance abuse treatment. Initial services included community outreach often to their place of residence and referral and/or linkage to a prenatal provider.

A MOMS case management team, consisting of a social worker and a public health nurse, delivered a full range of prenatal and postpartum maternity case management services. The services included assessment of pregnancy and postpartum needs for medical, economic, social, and developmental support services for the woman and her children (see Section V. A. for additional information on MOMS case management component).

Women who enrolled in the MOMS Project and were assigned to MOMS treatment were eligible to receive continuing intensive case management services for up to two years postpartum.

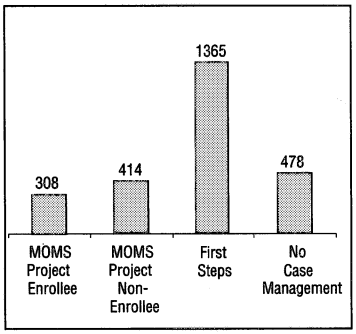
Women assigned to community treatment, as well as those who did not enroll in the project, were provided services by the MOMS Project case management team for up to 30 days and then transferred to a First Steps Maternity Case Manager.

Data And Methods. This study population consisted of women who gave birth in King County, Washington State, between July 1, 1991, and December 31, 1994, and had an indication of substance abuse as noted in any Medicaid claim, or received any publicly-funded substance abuse treatment in the prior post partum period. The Medicaid indication used for First Steps case management determination does not indicate a diagnosis of chemical dependency nor does it identify the severity of the substance abuse. All women enrolled in the MOMS Project had a diagnosis of serious to severe chemical dependency.

Women who gave birth after July 30, 1994, did not have two complete years of postpartum data on substance abuse treatment, foster care, and Child Protective Services (CPS), and were excluded from calculation of two-year postpartum means and frequencies.

For purposes of analysis, pregnant, chemically-using women were classified in the following four categories of services received: (a) those who were enrolled in the MOMS Project (n=308); (b) those not enrolled but who received initial case management services through the MOMS Project (n=414); (c) those who received Medicaid-funded maternity case management services (First Steps) (n=1365); and (d) those who did not receive any maternity case management services (n=478) (see Figure 22).

Figure 22: Sample Size: Case Management



Results

Client Characteristics: Demographic characteristics of women receiving MOMS case management services compared to women who did not receive MOMS case management revealed that MOMS women were:

- at higher socio-economic risk
- older (over 26 years)
- disproportionately African-American
- more likely never to have been married
- more likely to have two or more children
- more likely to be on public assistance
- less likely to be employed, if employed, reported a lower average income

Utilization of Substance Abuse Treatment Services:

- Women receiving MOMS case management prenatally were significantly more likely to receive substance abuse treatment at some time during their pregnancy or post partum (93% MOMS of Project enrollees and 62% non-enrollee) than were women who received First Steps case management (50%) and no case management (49%).

- Women receiving MOMS case management were significantly more likely to receive prenatal substance abuse treatment (87%, MOMS enrollees; 39%, non-enrollees) than women receiving First Steps case management (29%), or no case management, (18%).

- Women receiving MOMS case management who did not enroll in the project (23%) and women who received First Steps (23%) or no case management services (31%) showed a greater likelihood of receiving postpartum substance abuse treatment compared to MOMS Project enrollee women (6%).

- Accessing prenatal care over the course of a woman's pregnancy was about the same for both MOMS Project women (96%) and for women receiving community case management (95%).

- Women receiving community case management were significantly more likely to access prenatal care in the first trimester of pregnancy (60%) than were MOMS Project case managed women (52%).

- Women who received MOMS Project case management had significantly more referrals to CPS (53%) than women who did not receive MOMS case management services. MOMS Project women utilized foster care placement services through two years postpartum at a higher rate (40%) than women who did not receive MOMS case management services (17%).

Cost of Services:

- Maternal medical costs were significantly higher both for women who received no case management services ($14,725) and women who received MOMS Project case management ($14,208) compared to women who received community case management ($11,608).
- Infant costs through two years postpartum were comparable between women who received MOMS case management ($3,375) and all other women who did not receive such services ($3,352).

Figure 23: MOMS Case Management Compared To First Steps And No Case Management

Treatment/Care	Variable	N =	Percent
Received Any Prenatal Substance Abuse Treatment	MOMS Project Enrollees[a]	306	87%
	MOMS Project Non-Enrollees	414	39%
	First Steps[b]	1365	29%
	No Case Management	478	18%
Received Any Postpartum Substance Abuse Treatment	MOMS Project Enrollees	306	6%
	MOMS Project Non-Enrollees	414	23%
	First Steps	1365	21%
	No Case Management	478	31%
Received No Substance Abuse Treatment	MOMS Project Enrollees	306	7%
	MOMS Project Non-Enrollees	414	38%
	First Steps	1365	50%
	No Case Management	478	51%

Treatment/Care	Variable	N =	Average Cost
Prenatal Substance Abuse Treatment Costs[1]	MOMS Project Enrollees[c]	306	$4,728
	MOMS Project Non-Enrollees	414	$1,878
	First Steps	1365	$454
	No Case Management	478	$429
Prenatal/Delivery Maternal Medical Care	MOMS Project Enrollees[d]	308	$9,996
	MOMS Project Non-Enrollees	414	$9,153
	First Steps[e]	1365	$7,697
	No Case Management	478	$10,006
Postpartum Maternal and Infant Medical Care	MOMS Project Enrollees	308	$4,909 / $3,589
	MOMS Project Non-Enrollees	414	$4,535 / $3,216
	First Steps	1365	$3,911 / $3,241
	No Case Management	478	$4,718 / $3,671

Maternal
Infant

[1] Excludes women whose cost of prenatal substance abuse treatment could not be accurately determined

[a] Chi-squared statistic significant at 5% comparing MOMS enrollees to other women who received MOMs case management only

[b] Chi-squared statistic significant at 5% comparing women who receive only community case management to those who received no case management

[c] t-statistic significant at 5% comparing MOMs enrollees to other women who received MOM's case management only

[d] Includes additional women whose cost of prenatal/delivery care could be determined

[e] t-statistic significant at 5% comparing women who receive only community case management to those who received no case management

Discussion Overall, this study found that women receiving MOMS Project case management services were significantly more likely to receive substance abuse treatment during pregnancy and to receive it earlier in their pregnancies.

The finding that MOMS case management services did not appear to create an advantage in accessing prenatal care in the first trimester is reflective of the timing of enrollment for most MOMS women. Women were approached by MOMS case managers during the first trimester of pregnancy, with the majority of enrollments into the MOMS Project and prenatal care occurring in the second trimester (63%).

Similarly, the higher rates of substance abuse treatment did not translate into reduced use of other services such as foster care, CPS referrals, or medical care. Women who received MOMS case management appeared to be at higher risk for foster care placement and CPS referral prior to delivery, and this pattern continued in the postpartum period. The greater use of community services partly reflects the higher risk nature of the women who received MOMS Project case management and may be indicative of the MOMS Project case managers' success in linking patients to needed resources. However, this finding may also be partly attributable to the fact that MOMS women had more children and, therefore, were more likely to be involved with these services prior to the current pregnancy.

Higher cost of maternal medical care for MOMS women was, again, most likely related to the fact that women eligible for MOMS were a higher-risk population, requiring more medical intervention than the women receiving community case management.

Almost all MOMS women were identified with severe chemical dependency and often with other co-morbid physical and mental health conditions, whereas, the physical and mental health status of non-MOMS women could not be adequately determined for the purposes of this study.

Study Implications. The greater success rate of the high-risk women receiving MOMS case management in accessing substance abuse treatment during pregnancy suggests that specialized recruitment of pregnant, chemically-using women is a valuable and effective approach.

Also worth noting is the fact that, while infant costs were comparable between the two groups (MOMS vs. non-MOMS), expenses for the care of babies of the higher risk, more seriously chemically-involved MOMS women were held down to the level of a lower risk population.

(2) Selected One Year Postpartum Outcomes by Duration of Prenatal Chemical Dependency Treatment

by Joyce H. Huber

Study Objectives: This study examines the relationship between length of prenatal substance abuse treatment and selected postpartum outcomes among pregnant, chemically dependent women. It examines the relationship between treatment length and the following maternal and child outcomes: infant or fetal death, cost of postpartum medical care and substance abuse treatment, and use and cost of child protective services and foster care.

Data and Methods: Details on the databases used for this study are presented in the introduction of Section K.

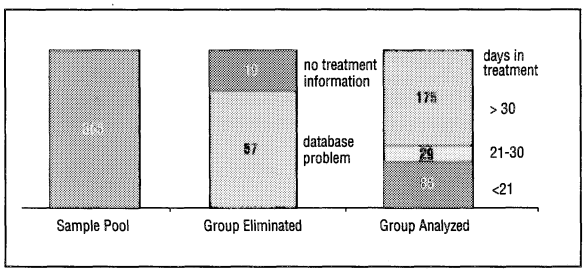
Length of treatment was measured across all prenatal treatment episodes irrespective of treatment location or modality. Treatment days were determined from MOMS Project treatment records, interviews with women in community treatment, and from the Washington State Medicaid and TARGET databases.

Treatment days were categorized as 0 to 20 days, 21 to 30 days, and over 30 days. Women completing less than 21 days of treatment were considered early treatment dropout.

Differences across the three treatment arms were tested for significance using T-tests for differences in means, and Chi-squared tests for differences in proportion. Differences that were significant at p=.10 are noted, with probabilities in parentheses.

Sample: The sample for this study includes service use and cost through one year postpartum available for 289 women (Figure 24). Of 365 women originally enrolled in the MOMS Project, 76 were excluded as follows: 57 were eliminated due to database problems and 19 had missing treatment information. Among the 289 women in the study, there was one maternal death and 9 infant/fetal deaths in the first year postpartum. Women who died or whose infant died during the first year postpartum were not included in estimates of postpartum use and cost of substance abuse treatment, medical care, CPS, or foster care.

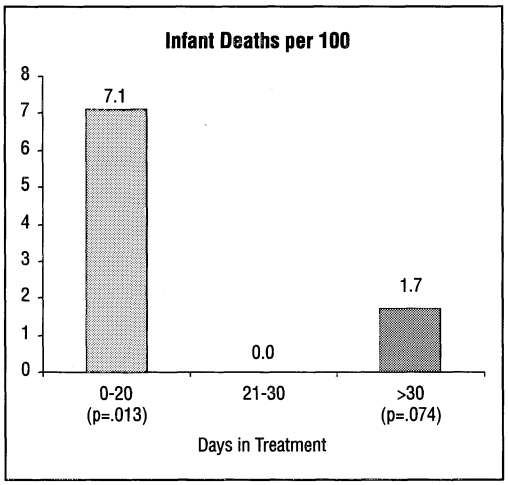
Figure 24: Sample Size: Postpartum Outcome by Prenatal Treatment Duration



Results - One Year Postpartum:

Infant/Fetal Deaths: Figure 25 shows that the rate of infant or fetal death was significantly lower for women who participated in over 21 days of substance abuse treatment (1.7 deaths per 100) compared to women who had 20 or fewer days of treatment (7.1 deaths per 100).

Figure 25: Infant Deaths by Days in Treatment

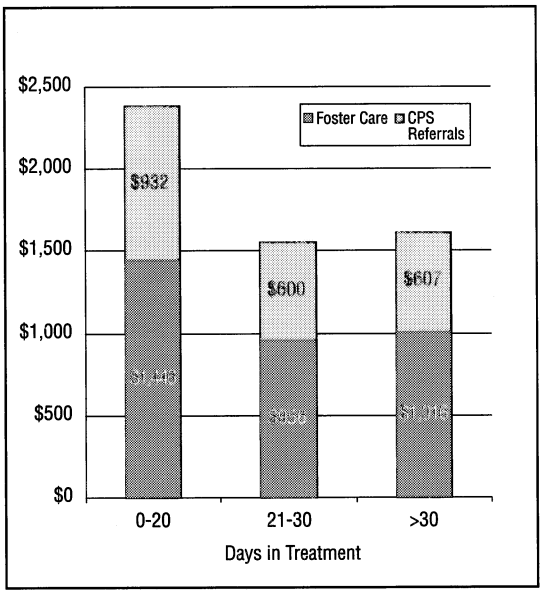


Cost and Use of Services

One-year postpartum spending on maternal and infant medical care, chemical dependency treatment, and Child and Family Services were compared by duration of prenatal chemical dependency treatment.

- No differences were found in maternal and infant medical care by duration of treatment.
- Postpartum substance abuse treatment was higher for women who received more than 30 days of prenatal substance abuse treatment ($778 compared to $485 for women with 21 to 30 days, and $207 for women with less than 21 days).
- Total spending on Child and Family Services (foster care and CPS) was lower for women who stayed more than 30 days in treatment ($1,623) compared to those that stayed less then 21 days ($2,378).
- Figure 26 shows that foster care averaged $1,016 and CPS payments averaged $607 for women who stayed more than 30 days in treatment compared to $1,446 and $932 for women who stayed less than 21 days.

Figure 26: Postpartum Cost and Use of Foster Care and CPS by Duration of Prenatal Treatment



Study Implications: Pregnant women enrolled in the MOMS Project who stayed over 21 days in treatment appeared to have improved infant outcomes in terms of a lower infant/fetal death rate and less foster care and CPS spending. However, treatment completion did not result in lower medical cost of substance abuse treatment compared with women who received less treatment.

(3) Selected Postpartum Outcomes by Randomized Treatment Assignment

By Joyce H. Huber

Study Objectives: This study examines the effectiveness of substance abuse treatment programs for pregnant women with respocet to select postpartum outcomes. The study design provides an opportunity to examine rigorously the incremental benefits of the residential component of substance abuse treatment compared to a similarly intensive outpatient treatment. It also examines whether either of the two MOMS experimental treatments provides benefits above those of community treatment.

Other studies that have compared the relative effectiveness of residential and outpatient substance abuse treatment have produced conflicting results. French et al. (1993) and Walsh et al. (1991) found residential treatment to be more effective than outpatient treatment for select' outcomes. Alterman et al. (1994), Hayashida et al. (1989), and Longabaugh et al. (1983) found no significant differences in outcomes for patients assigned to inpatient treatment and those assigned to outpatient treatment.

Those studies that found inpatient treatment to be more effective compared very intensive inpatient programs with less intensive outpatient programs. Thus, the treatments differ both in the residential aspect and the intensity (i.e., number of hours of treatment per week).

This study advances the literature on the relative effectiveness of different treatment modalities by comparing two programs of essentially identical intensity, one with a residential component. Also it examines the effectiveness of treatment for a pregnant population, which has not been the focus of previous studies, and measure effectiveness in terms of outcomes and costs that are of particular importance among pregnant and parenting women. These outcomes include foster care, child protective services (CPS), and public spending on substance abuse treatment and medical care.

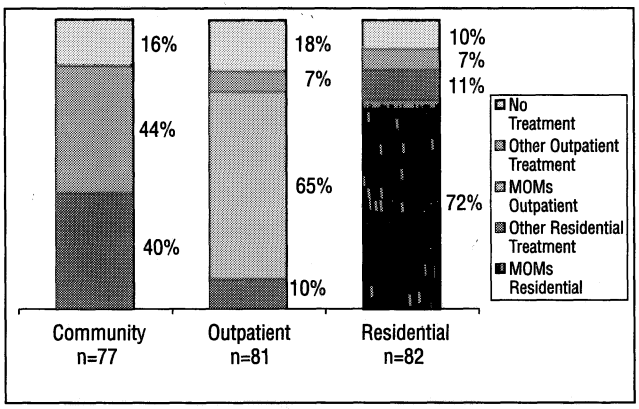
Description of the Population Women who enrolled in the MOMS Project were randomly assigned to one of two MOMS Project treatments; 30-day intensive inpatient or 30-day intensive outpatient,[1] both followed by additional outpatient treatment; or were randomly selected for referral to community treatment facilities.

The MOMS-funded intensive outpatient treatment and intensive inpatient treatment consisted of the same program components except that the intensive inpatient arm allowed women to live at the facility with their children (up to 6 years of age) for 35 days.

Women in the control group were placed in particular programs based on treatment protocols and according to patient needs and preferences and received the spectrum of treatment available in the community.

Likewise, not all women who were randomized to one of the MOMS treatment arms actually received treatment at the MOMS treatment facility. Figure 27 shows the actual treatment women received regardless of their assigned arm. Thus, the mixture of MOMS/non-MOMS treatment that women actually received dilutes comparison of the relative effectiveness of the MOMS modalities.

Figure 27: Actual Treatment Received Regardless of Randomization



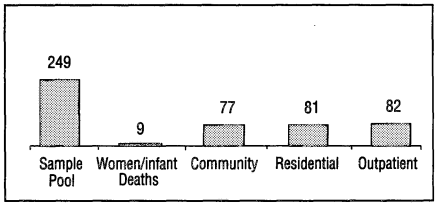
[1] The total length in residency was 35 days but the first week of treatment in both programs consisted of attending appointments, assessments, and other transitional activities.

[2] One woman and eight infants died during the follow-up period. The differences in death rates across treatment arms were not significant. Use and costs were calculated including and excluding women who died or whose infants died prior to the end of the follow-up period and there was no significant difference in outcomes or costs.

Sample and Data For this study, women were included in the modality to which they were randomized regardless of whether or not they actually received that MOMS treatment. Data for this study were available for 240 women (see Figure 28): 249 were matched to the birth certificate for the relevant infant; nine women were excluded because they or their infant died within two years postpartum.[2] The number of women and infant pairs who survived through two-years postpartum was 81 randomized to MOMS intensive outpatient treatment, 82 women randomized to MOMS residential treatment, and 77 women randomized to community-based treatment.

Details on the data bases used for this study are presented in the introduction to Section K.

Figure 28: Postpartum Randomized Sample Size for Analysis



Results Client Characteristics: Client characteristics and prenatal service use were compared across modalities.

- Women randomized to MOMS outpatient were: more likely to be married (23%) compared to residential (13%, p=.098) or community women (13%, p=.089) and less likely to be employed (15%), than women in residential treatment (26%, p= .086) or community treatment (29%, p=.085) respectively.

- Outpatient and residential women had more children on average than community women (1.8, p=.077; 1.9, p=.046; and 1.4 respectively).

- Women enrolled in the MOMS Project were at high risk for a CPS referral or foster care placement. Eighteen percent had an accepted CPS referral during their pregnancy and 14% already had a child in foster care. This high involvement with CPS and foster care increased in the postpartum period as some women who had no other children became involved with these systems for the first time.

Figure 29 shows the percent of MOMS enrollees with any prenatal use of CPS or foster care compared to any postpartum use of CPS or foster care.

- Seventeen percent of outpatients had a CPS referral during pregnancy compared to 22% of residential women and 14% of community women.

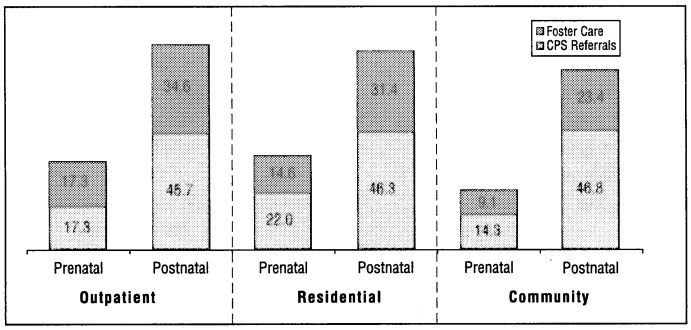
- During the first year postpartum, these rates increased to about 46% across all modalities. Neither these differences, nor the differences in the change in CPS referral from the prenatal to the postpartum period, were significant.

- Prenatal foster care use was 17% for MOMS outpatients, 15% for MOMS residents, and 9% for community women.

- In the first year postpartum the percent of women who had any use of foster care increased in all groups to 35% for MOMS outpatients, 31% for MOMS residents, and 23% for community women. The lower prenatal and postpartum use of foster care among women randomized to community treatment likely reflects fewer children on average. However, these differences were not statistically significant.

Postpartum spending on substance abuse treatment and other medical care was also examined.

Figure 29: Comparison of MOMS Enrollees' Prenatal and Postpartum Use of CPS or Foster Care



- There was no significant difference in postpartum spending on substance abuse treatment, which averaged $1,739 on women randomized to MOMS Project outpatient treatment, $1,994 for women randomized to MOMS Project residential treatment, and $1,622 for women randomized to community treatment.

- Spending on maternal and infant medical care in the first year postpartum averaged $5,495 for MOMS outpatient clients compared to $3,985 for MOMS residential clients and $4,827 for MOMS community clients.

While medical costs averaged $1,511 less for women randomized to MOMS residential treatment arm compared to women randomized to MOMS outpatient arm, this difference was not statistically significant due to the large variance of medical expenditures.

Discussion This study compared women randomized to two experimental substance abuse treatments and one control treatment for selected postpartum outcomes. No significant differences in outcomes were found among the three treatments on any of four outcomes postpartum: change in percent of women with any CPS referral, change in percent with any foster care placement, postpartum substance abuse treatment spending, or postpartum medical costs.

These findings should be interpreted with caution. The comparison of MOMS outpatient treatment to MOMS residential treatment is based on the women's randomized assignment not on where or if treatment was actually received. Eighteen percent received other community treatment, and 14% received no prenatal substance abuse treatment. Thus in comparing the two MOMS treatment arms we are measuring the *weighted effects* of MOMS treatment, community treatment and no treatment.

The interpretation of the community comparison group is even more difficult since community treatment consisted of a wide range of modalities and intensities of treatment. On average, however, treatment intensity of the community treatment arm was lower than that of either MOMS treatment since only 40 % of women randomized to community treatment received intensive hospital-based or residential treatment. The more intensive treatment programs did not appear to have any significant impact on the outcomes examined.

Finally, the results may reflect the small sample available for analysis. There were some effects that may have been significant if the sample size had been larger. For example, the $1,511 difference in postpartum infant and maternal medical costs between MOMS outpatient and MOMS residential women would have been significant with 145 observations per group.

Study Implications

While no differences in outcomes could be detected across the three treatment arms, women randomized to MOMS intensive outpatient treatment had considerably lower prenatal substance abuse treatment costs ($3,354), than those randomized to MOMS residential ($5,655) or community treatment ($5,535, p=.001 and p=.007 respectively).[3] Thus, it appears that women can be offered a very intensive outpatient/day treatment at much lower cost than an option that includes a substantial residential component, with no significantly worse impact on several important outcomes.

[3] The high cost of community treatment is attributable entirely to the use of expensive hospital-based substance abuse treatment which averaged $7,862 per recipient.

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